EVALUATION OF CULTURAL COMPETENCY MEDICAL EDUCATION CURRICULUM THROUGH THE ASSESSMENT OF CHANGES IN STUDENT RACIAL ATTITUDES

BY

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DISSERTATION

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This study examined whether there was a significant change in incoming medical students' attitudes towards cultural competency issues (in this case color-blind racism) following a cultural competency intervention during the first year of medical school. This study also examined whether there were significant differences in cultural attitudes when scores were examined by the student demographics of gender, race/ ethnicity, immigration status, income, social status, undergraduate major, graduate degree and age with regards to both: i. one's initial attitudes and ii. change in one's attitudes with the given intervention. Finally, this study examined whether there was in improvement in changes in cultural attitudes towards cultural competency in comparison to first year medical students of two consecutive cohorts, given that the second first-year medical student cohort received additional opportunities for exposure to cultural competency-related curriculum. Overall 291 surveys using the Color-Blind Racial Attitudes Scale (CoBRAS) were collected over a two year period (with a total of four survey administration dates) at a U.S. Midwestern medical school. Two main research hypotheses were tested using independent t-test and nonparametric Mann-Whitney tests. This study found no significant change in CoBRAS mean scores between pre- and post- intervention dates. The study did find significant changes in mean CoBRAS scores when scores were separated by both gender and race/ ethnicity, with such significance disappearing in the post-intervention dates. No significant change in mean CoBRAS scores were found between the two cohort years. This study highlights the need for further quantitative analysis of changes in medical student racial attitudes

as a measure of cultural competency as well as the need to work towards a required, comprehensive, and integrated cultural competency program.

Keywords: medical school education, cultural competency, racial attitudes

This dissertation is dedicated to two influential men in my life:

Evaristo Banson Ruiz (1924 -2007), who taught me the values of faith and patience and

Reynaldo Eusebio Ruiz, who taught me the values of hard work and perseverance.

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CHAPTER I: INTRODUCTION

The Argument for Cultural Competency in Undergraduate Medical Education

Health care disparities in terms of access, service use, and quality of health care have been heavily documented by both academic and governmental institutions since the civil rights movement of the 1960s. Such healthcare disparities exist along various social, economic, and political lines and are perhaps most studied and exemplified among United States racial and ethnic minorities. Racial and ethnic health disparities have been documented for a broad range of illnesses and healthcare services (Institute of Medicine [IOM], 2002). This range of health care disparities for racial and ethnic minorities will be discussed in depth in the literature review. While such disparities are shown to slightly decrease when socioeconomic factors are controlled for, the majority of studies show that racial and ethnic disparities remain even with the control of such socioeconomic factors as income and health insurance coverage (Geiger, 2002; Kressin and Petersen, 2001; Mayberry, Mili, and Ofili, 2000).

If health care disparities continue to exist even when such socioeconomic variables such as income and health insurance coverage are controlled for, one must look at interpersonal, societal, and institutional factors for a possible explanation. One example of an interaction heavily influenced by social factors is the clinical consultation between the physician and the patient. This clinical consultation serves as the basis of the health care system. Formally, the clinical consultation is defined as an interaction between lay and professional parties within a healthcare setting (Klienman, 1978). For the consultation to be successful there must be an agreement between *both* parties on the diagnosis, physiological process, prognosis, and treatment of the disease (Bloom, 2005). It may be argued that the patient's agreement to and understanding of the treatment of the disease is most important. For example, it is usually the patient that must

agree with the professional's diagnosis and mode of treatment in order for treatment to either be performed on them (e.g. surgery) or be carried out by the patient (e.g. oral medication, diet, exercise, etc.). A breakdown in the clinical consultation can be due to a misunderstanding between the two parties and can occur if there is either a lack of awareness, understanding (of cultural differences), or a perceived bias from either group. In fact, a small but growing body of clinically-based research highly suggests that the provider's conscious and unconscious bias of a patient's race and gender affects his or her treatment recommendations and ultimately patient outcomes (Schulman, Berlin, Harless, Kerner, Sistrunk, Gersh et. al., 1999).

The importance of addressing racial and ethnic health disparities in the US is made even more apparent when one notes the increasing racial, ethnic, and cultural diversity of the United States. Since 1980, the Asian American population has tripled, the Hispanic population has doubled, the Native American population has increased 62%, and the Black population has increased 31%, while the Caucasian population has remained stable (US Census, 2004). This trend, according to the US census, is only expected to increase. From 2000 to 2050, both the Asian American and Hispanic populations are expected to triple and the overall US population is expected to be 50% nonwhite (US Census, 2004). Many individual states already show this trend. As of 2004, Texas, California, New Mexico and Hawaii are minority-majority (where minority racial groups make up the majority of the population: 50.2%, 56%, 57%, and 77%, respectively). The US Census predicts that "Maryland, Mississippi, Georgia, New York and Arizona — are next in line [for minority-majority populations]," (2004, para.2). Currently, 100 million Americans, or one out of three individuals, are nonwhite. Combining these statistics with already existent health care disparities illustrates that it is even more urgent to implement effective cultural competency educational programs in the medical professions.

Overall, there are three main reasons that the current United States health care system has a vested interest in cultural competency training for current and future physicians (IOM 2002). The first is to address the real and prevalent health care disparities that currently exist among people of various diverse backgrounds. These disparities exist even when other economic factors such as income and health insurance coverage are controlled for. Second, such health care disparities may only increase and exacerbate as the increasing diversity of the US population reinforces the need to understand the influence of culture in medical outcomes. Finally, cultural competency training for current and future physicians is critically important in order to reduce racism, prejudice and discrimination, both personal and institutional, which has been shown to affect physician decision-making and ultimately may affect health outcomes (see chapter 2). Overall, by increasing the awareness of the existence of health disparities and cultural diversity, cultural competency education at the provider level can act as an intervention strategy to reduce existing health disparities.

The National Movement for Cultural Competency in Undergraduate Medical Education

As a consequence of the aforementioned health disparities there has been a national push towards cultural competency in medical education from all levels. Organizations such as the Institute of Medicine (IOM), the American Medical Association (AMA), and the Association of American Medical Colleges (AAMC) have addressed the critically important role of training current and future physicians to recognize particularly ethnic disparities in healthcare and treat a diverse patient population (AAMC 2000; AMA 2004; IOM 2002). In their 2002 comprehensive health disparity report on racial and ethnic minorities entitled *Unequal Treatment*, the IOM acknowledged that while "patients can benefit from culturally appropriate education programs to

improve their knowledge of how to access care and their ability to participate in clinical-decision making…The greater burden of education…lies with providers (p. 2)."

Perhaps the strongest administrative input on the importance of medical education comes from the national organization which licenses all US medical schools. In February of 2002, the Liaison Committee on Medical Education (LCME), the national accreditation board for US medical schools, added a required cultural competency standard for all US medical schools in order to receive accreditation:

> The faculty and students must demonstrate an understanding of the manner in which people of diverse cultures and belief systems perceive health and illness and respond to various symptoms, diseases, and treatments. Medical students should learn to recognize and appropriately address gender and cultural biases in health care delivery, while considering first the health of the patient (Functions and Structures of a Medical School, LCME, 2000).

Cultural Competency

The American Association of Medical Colleges (AAMC) uses Cross' 1989 definitions of culture, competence, and cultural competence. "Culture" refers to integrated patterns of human behavior that include the language, thoughts, actions, customs, beliefs, and institutions of racial, ethnic, social, or religious groups. "Competence" implies having the capacity to function effectively as an individual or an organization within the context of cultural beliefs, practices, and needs presented by patients and their communities. Cultural and linguistic competence is a set of congruent behaviors, knowledge, attitudes, and policies that come together in a system, organization, or among professionals that enables effective work in cross-cultural situations (Cross, Bazron, Dennis, & Isaacs, 1989). More systematically and operationally defined, cultural competence is the integration and transformation of knowledge about individuals and groups of people into specific standards, policies, practices, and attitudes used in appropriate cultural

settings to increase the quality of services; thereby producing better health outcomes (Davis, 1997).

The concern for cultural competency in medical education has increased within the last ten years, in part from the recommendations and mandates given by institutions such as the LCME, IOM and AAMC. Yet the discussion of cultural competency originated in the 1960s with the rise of the community health and civil rights movement (IOM, 2002). Since then, healthcare scholars from various disciplines have worked to develop and implement relevant services for culturally diverse populations (Purnell, 1998). Its importance was acknowledged with the increasing recognition of cultural differences in health attitudes, beliefs, behavior and language (Chin, 2000). The work by Kleinman, Eisenberg, and Good in the 1970s (1978) served as reinforcement by solidifying the connections between culture, illness and healthcare. From the 1980s to 1990s, there was a shift from "cultural sensitivity" to "cultural competence" which is skill-focused by definition (Lavizzo-Mourey, 1996; Rios & Simpson, 1998; Welch, 1998). Early work on cultural competency was done in the fields of nursing, mental health, and family medicine in the US and internationally in the countries of Australia, Great Britain, and Canada (Kai, Spence, Wilkes, & Gill 1999; Kristal, Pennock, Foote, Trygstad, 1983; Louden, Anderson, Paranjit, Greenfield, 1999; Shapiro and Lenahan, 1996). Several government groups and scholars have provided various definitions; however, the most commonly referred to definition of cultural competency in the health fields is from Cross et al (1989).

The Office of Substance Abuse and Prevention offers another definition of this concept:

> Cultural competence is the set of academic and interpersonal skills that allow individuals to increase their understanding and appreciation of cultural differences and similarities within, among and between groups. This requires a willingness and ability to draw on community-based values, traditions and customs and to work with knowledgeable persons of and from the community in developing focused interventions,

> communications, and other supports (US Department of Health and Human Services (HHS, 1992, p. vi).

Such a definition useful in the practical implementation and application of cultural competency training programs.

It is important to note that the definition of "cultural competency" is in constant flux as the field continues to expand. As will be discussed in the literature review (Chapter 2), the term "cultural competency" itself is also up for debate. One reason supporting disuse of the term is the concept that one can never be truly "competent." In response, several scholars have examined the use of the phrase "cultural humility" as being a more accurate and appropriate term. As cited by Tervalon and Murray-Garcia (1998), cultural humility "incorporates a lifelong commitment to self-evaluation and self-critique, to redressing the power imbalances in the patient-physician dynamic, and to developing mutually beneficial and nonpaternalistic clinical and advocacy partnerships with communities on behalf of individuals and defined populations" (1998, p. 117). For the purposes of this study, the term "cultural competence" will be referred to for a number of reasons. In abbreviated terms, this research project will use the term "cultural competence" because of its current familiarity with both the medical and medical education professions. In addition, while Tervalon and Murray-Garcia make a valid argument that "competency" is a state that can never be fully reached and that "humility" may be a slightly more accurate term, "competency" is a term that is more relatable and easily understood to the culture of health care and medicine. Overall, for the purposes of this research, it serves practical purpose to use the term "cultural competency" during this time and place.

The Current State of Undergraduate Medical Cultural Competency Education

While there has been a push for cultural competency in medicine and medical education since the 1960s civil rights movement, the development, administration, and evaluation of such

programs is still in its infancy. Even with the given definition of cultural competency there exists the problem of implementing a program and integrating it within the current state of medical education. Although most medical schools have implemented some form of cultural competency training, the types of education and assessment are inconsistent among programs. Most efforts have been limited to adding additional coursework in the form of electives or as part of an already existing required course or courses in undergraduate medical education. Undergraduate medical education is defined as a traditional four-year education in Medicine at a medical school after a four year undergraduate college degree. Studies show the diversity of instruction including: lectures and interactive sessions (Gonzalez & Simon, 1997), workshops (Godkin & Weinreb, 2001), student clerkships (Rodgers & Coulehan, 1984), electives (Esfandiari, Drew, Wilkerson & Gill, 2001), immersion programs (Godkin & Weinreb, 2001; Rubenstein et al., 1992), month long rotations (Takayama et al., 2001), cultural teaching objective structured clinical examinations (OSCEs; a standardized examination to evaluate a health practitioner's clinical skills) (Altshuler & Kachur, 2001), and language training (Godkin & Weinreb, 2001). In the 2001 *All Schools Report,* the LCME surveyed the medical schools to see how they are addressing this standard. Survey results showed that of the 168 accredited allopathic and osteopathic medical schools in the US[3]:

3 schools addressed cultural competency as a separate required course

112 schools addressed it as part of a required course

21 schools addressed it as a separate elective

[3] Note: with recent LCME accreditation requirements, these numbers could have changed significantly from this original writing.

32 schools addressed it as part of an elective[4].

In addition, there is an inconsistency among medical schools in the use and understanding of the terms "culture" and "diversity." Nunez (2002) notes that definitions for these terms range from a narrow focus on "race" (i.e. "black" versus "white") to "people who are not like you" and everything in between. In addition there are diverse ways in which cultural competency is taught in medical schools.

Anthropological and sociological research suggests that biomedical culture—and by relation medical education—is a "key to the transmission of stigma [and] the incorporation and maintenance of racial bias in institutions" (Kleinman & Benson, 2006, p. 294; Lee et al 2005, Keusch, Wilentz & Kleinman, 2006; US DHHS 1999). Evidence of this statement would suggest a need to implicitly and consciously address the issues of cultural competency though systematic curriculum development starting with first year medical students. While there is a near plethora of suggestions, programs, and guidelines for cultural competency in medical education, there exists little research on the current level of cultural competency of medical students prior to the implementation of significant curriculum change. Additionally, despite all of the studies defining and implementing cultural competency programs, there is little to no empirically-based evidence showing that the *current* undergraduate medical education may directly influence a student's cultural competency for better or worse. By providing a baseline evaluation of the current status of a medical school's curriculum, this research will provide a basis for which suggestions can be made for effective cultural competency curriculum change.

[4] With the 2000 LCME accreditation changes these numbers have changed and could still be changing as medical schools go up for their reaccreditation. These numbers reflect the state of schools immediately after the addition of the LCME cultural competency accreditation standard.

Research Questions and Hypotheses

The following questions will be investigated:

Research Question 1:

1. Is there a significant change in incoming medical students' cultural attitudes towards cultural competency issues (in this case color-blind racism) following a cultural competency intervention during their first year of medical school?

Research Hypothesis 1:

H_0: There is no significant difference in medical students' cultural attitudes towards cultural competency issues (color-blind racism) following a cultural competency intervention during their first year of medical school.

H_a: There is a significant difference in medical students' cultural attitudes towards cultural competency issues (color-blind racism) following a cultural competency intervention during their first year of medical school.

Research Question 1a:

a. Are there significant differences in cultural attitudes when scores are examined by student demographics (i.e. gender, race/ ethnicity, immigration status, income, social status, undergraduate major, graduate degree and age) with regard to:

i.) one's initial cultural attitudes and

ii.) change in one's cultural attitudes with the given intervention?

Research Hypothesis 1a, part i:

H_0: There is no significant difference in cultural attitudes when scores are examined by student demographics in regards to one's initial cultural attitudes.

H_a: There is a significant difference in cultural attitudes when scores are examined by student demographics in regards to one's initial cultural attitudes.

Research Hypothesis 1a, part ii:

H_0: There is no significant difference in cultural attitudes when scores are examined by student demographics in regards to change in one's cultural attitudes with the given intervention.

Ha: There is a significant difference in cultural attitudes when scores are examined by student demographics in regards to change in one's cultural attitudes with the given intervention.

Research Question 2:

2. Do first year medical students show significant improvement from year I in their cultural attitudes towards cultural competency issues in comparison to first year medical students in year II with increased exposure to cultural competency issues in the required curriculum?

Research Hypothesis 2:

H_0: There is no significant improvement in first year medical students from year I in cultural attitudes towards cultural competency issues in comparison to the first year medical students in year II.

H_a: There is a significant improvement in first year medical students from year I in cultural attitudes towards cultural competency issues in comparison to the first year medical students in year II.

CHAPTER II: LITERATURE REVIEW

As the previous chapter discussed the importance of cultural competency medical education, the following chapter will review the current theories and research including that of: (1) culture and cultural competency, (2) health disparities, (3) explanations of health disparities, (4) theories of minority status, simultaneous oppression, multiple identities, and triangularization, (5) extent of the definition of culture, (6) biomedicine as culture, (7) demographics of US physicians, (8) the clinical encounter related to health disparities including patient trust, provider bias, and stereotyping, (9) medical school as a culture, (10) manifest and hidden curriculum, (11) models of cultural competency training, (12) the concerns of integrating of cultural competency in the curriculum, (13) current programs and (14) evaluation of cultural competency assessment tools.

Culture and Cultural Competency

The definition of culture as cited by Cross (1989) suggests that that "every person is a cultural being and that all persons have a specific cultural, ethnic and racial heritage" (Balcazar, Willis, Suarez-Balcazar, Leung, Hasnain & Alverado, 2007, n.p.) and that the issues of cultural competency and diversity go beyond that of race and ethnicity. Expanding the scope to that of all groups that have experienced marginalization by the majority group, cultural competency education would include an innumerate number of groups such as women, homosexuals, non-Christians, rural residents, the physically and mentally disabled, and the homeless. Yet, for the purpose of this particular literature review and subsequent research, the terms cultural competency and diversity will refer primarily to those individuals in the US who are non-Caucasian and/or were born outside the United States. The main reason is that a vast majority of previous research has centered around racial and ethnic disparities with strong research evidence

suggest[ing] that race/ethnicity plays a central role in predicting poor or limited outcomes for minority groups for employment, education and health outcomes. This is particularly true when minority status is associated with other factors such as low-socioeconomic status, limited levels of education and/ or immigration status (Atkins & Wright, 1980; Brach & Fraser, 2000; Feist-Price, 1995; Mayeno & Hirota, 1994). In addition, the decision to use race and ethnicity as primary indicators of culture and cultural competency is not as exclusive as it may initially appear. As the following sections will reveal, race and ethnicity cannot be properly discussed or analyzed outside the context of other social factors. The following sections will illustrate health disparities encountered by various cultures.

Health Disparities

Racial health disparities have been well documented in the last two and a half decades. The evidence is strong that health disparities exist for ethnic and racial minorities, mostly documented among African Americans. For example, as of 2001, Epstein and Ayanian noted that "there is little evidence that racial disparities in medical care or in measures of health have substantially diminished," (p. 1471) despite the substantial technological improvements and unprecedented explosion of medical knowledge in the last 50 years. Williams and Rucker note that in 1995, the overall African-American mortality rate was 60 percent higher that that of Whites—precisely what it had been 45 years prior in 1950 (Williams & Rucker, 2000). Byrd & Clayton (2000) and Geiger (2002) elaborate on the overall health of racial and ethnic health disparities:

> At no time in the history of the United States has the health status of minority populations—African Americans, Native Americans and more recently, Hispanics, and several Asian subgroups—equaled or even approximated that of White Americans. The health of all American racial and ethnic groups has improved dramatically, particularly over the last six decades, but the paired burdens of excess morbidity and decreased life expectancy for people of color have been noted over several centuries and expectancy for

> people of color have been noted over several centuries and have proven, even recently, to be stubbornly resistant to substantial change (Byrd & Clayton, 2000; Geiger, 2002; National Center for Health Statistics, 1998).

While health disparities are well-documented for racial and ethnic minorities, particularly African Americans and recently Latinos, there is little research on other groups, including but not limited to non-heterosexuals and those who live in rural communities. In 2005, the Society of Public Health Educators (SOPHE) issued a *Resolution on Eliminating Health Disparities Based on Sexual Orientation.* In this resolution, they cited that those of homosexual orientation have historically been medically ignored. While current research exists for population-based health surveys, there are no large scale surveys that specifically target the lesbian, gay, bisexual and transgendered (LGBT) population, currently limiting health researchers to small case-based studies and methods of convenience sampling (Myer, Silenzio & Wolfe, 2000). This situation is very similar to other marginalized populations including the disabled, non-Christian groups, and the geographically isolated.

The LGBT population provides a good example of how diverse the type of health care disparities can be from both the majority population and other minority group populations. The LGBT population has specific problems that can affect their receipt of health care from providers. For example, different stereotypes, biases, and prejudices exist for the LGBT community which is seen as sinful, immoral, repugnant, and abhorrent (Ungvarski & Grossman, 1999) if they reveal their identity. Yet remaining hidden can cause undue stress from "living a dual life in which social support is lacking from family, co-workers, or religious organizations" (Harrison, 1996, p. 22). Those in the LGBT community are more prone to smoking and use of alcohol (Diamant, 2000; Valanis, Bowen, Bassford, Whitlock, Chaney & Carter, 2007) leading to gay males being at higher risk for lung cancer and heart disease than heterosexual males. In

terms of reproductive and sexual health, those in the LGBT community are less likely to receive Pap smears compared to the general US population (Diamant, 2000). For men who have sex with men, HIV rates are increasing, particularly in African American gay men despite 15 years of HIV prevention efforts (Laird, 2001). Access is a particularly unique situation for the LGBT community as those in LGBT relationships are not recognized by the government (and thus many institutions such as clinics and hospitals) as authentic family networks. Lack of recognition leads to denial of family privileges normally granted to heterosexual families, causing additional stress and barriers in terms of disclosing their identity (O'Hanlan, Cabaj, Schatz, Lock & Nemrow, 1997). In terms of mental health, gay men are among the most frequent victims of hate violence in the US with 50% of gay youth and 20% of lesbians verbally or physically assaulted in school (Finn & McNeil 1987). In addition, estimates predict that LGBT youth are two to three times more likely to attempt suicide than the general population (Baker, 1993; Harrison, 1996).

Health disparities can be tied not just towards individual identity but geographic location as well. Compared to racial and ethnic minority health disparities, rural health disparities are not well-known by the major policymakers and members of Congress. In 2002, the National Rural Health Association presented the Institutes of Medicine (IOM) with a preliminary report on the health disparities of rural communities in the US (Wilhide, 2002). In it they note that rural residents tend to be poorer overall and have less access to health care than their urban and suburban counterparts. The 1996 real per capita income in rural areas is nearly 30 percent lower than those in urban areas. The elderly in rural areas are also more likely to rely on Medicare and Medicaid programs and less likely to have supplemental, private insurance coverage. In addition, prescription drug coverage is less available in rural areas (53.9% versus 60.2%). Insurance coverage is complicated by the fact that those who live in rural areas are more likely to be self-

employed and thus not be eligible for insurance plans with lower out-of-pocket fees as many of their metropolitan counterparts. In terms of direct access, there are fewer health care professionals working in rural areas and those who do work in such areas must care for people who live farther distances from them (Ricketts, 1999). In 1997, 40 percent of non-metropolitan areas are labeled as primary care shortage areas versus 12 percent of metropolitan areas. In addition, almost seventy-five percent of non-metropolitan counties are designated as whole or part-county Medically Underserved Areas (MUAs). Such a rating is determined by the federal government and is formulated on the variables of "ratio of primary medical care physicians per 1,000 population, infant mortality rate, percentage of the population with incomes below the poverty level, and percentage of the population age 65 or over" (US Human Resources and Services Administration, para. 4, n.d.). In terms of health disparities, those who live in rural areas tend to have higher suicide rates for male adults, higher rates of chronic obstructive pulmonary disease (COPD), teen pregnancies, and chronic conditions than those in core metropolitan areas.

As the examples of sexual orientation and geographical location reveal, understanding how to address the health care needs of such a diverse and multifaceted population requires not just a "knowledge base," as such a process would be never-ending and complex, but requires the right mindset. The next two sections will discuss possible explanations for the current minority health disparity gap as well as the use of intersection theories in order to better understand how the concept of cultural competence will be approached.

Explanations of Racial and Ethnic Minority Health Disparities

There are four main explanations for the presence of racial/ ethnic minority health disparities, each with substantial evidence. The most commonly cited is that such disparities have been linked to socioeconomic status factors (income, education and employment status),

lifestyle and behavioral choices (occupation, environment, housing, nutrition) and different cultural beliefs related to health and illness. Another explanation for minority health disparities has been the unequal access to insurance. All of these variables have been shown to play a role. In other words, if one could account for or provide equal access to health insurance, disparities would disappear or be significantly reduced. While some studies support this claim, overall it has been shown that significant racial and ethnic health disparities exist even when such factors are taken into account (Geiger, 2002; Kressin & Petersen, 2001; Mayberry, Mili, & Ofili, 2000).

The third explanation cited by the literature is the idea that prevalent values and beliefs from the larger society permeate the healthcare field. One blatant example of these values and beliefs is the idea that there are biological and genetic differences between people of different races, an idea that stems from 19th century views. One recent example of this comes from one of the most famous biologists of modern time, James Watson, who had come under fire for supporting such views as recently as 2007 (British Broadcasting Company (BBC), 2007; Cable News Network (CNN), 2007; Microsoft Network & National Broadcasting Company (MSNBC), 2007; Times Online, 2007). Today, such views are widely recognized by scholars to be inaccurate and that race is a social construct and not a meaningful biological one (Marks, 1995; Cavalli-Sforza, Menozzi & Piazza, 1994; Witzig, 1996). Despite the lack of support for the idea of "race as a biological construct", "arguments about the medical importance of racial grouping continue to appear, without pejorative intent and in highly sophisticated form" (Geiger, 2004, p. 418, Goodman, 2000; Wood, 2001; Schwartz, 2001).

The fourth suggestion on the causative agent of minority health disparities, one that will be the primary focus of this dissertation, is that racial and ethnic discrimination plays a real role beyond the historic and institutional dimensions and onto the more personal level of the patient-

provider relationship. A wide range of literature strongly suggests that health care provider bias—whether conscious or unconscious, individual or institutional—exists through the prevalence of racist beliefs and discriminatory behavior (Farley & Allen, 1989; Feagin, 1991; Hacker, 1992; Massey & Denton, 1993; Polednak, 1997; Steinhorn & Diggs-Brown, 1999; Waller, 1998). Personal provider bias as a factor in patient health care has been recognized by such organizations as the American Medical Association (AMA) acknowledging that "Disparities in treatment decisions may reflect the existence of subconscious bias…The health care system, like all other elements of society, has not fully eradicated this [racial] prejudice" (Council on Ethical and Judicial Affairs, 1990, p. 2346).

Theories of Minority Status

Minority Status

Before one can truly begin discuss minority disparities and how to address them, one must clarify the use of the term *minority* and *minority status*. What does it mean to be a minority in society and how does one group find itself defined as a minority and other not? The use of the term "minority status" can be particularly confusing in contemporary society. People of color, women, those of homosexual orientation, people with disabilities, and individuals without naturalization status / citizenship are a few of many groups who have been viewed as minorities.

The representation theories of Foucault (1986), Habermas (1987), and Wirth (1945) use the term *minority status* when referring to groups that share a history of being denied access to resources and privileges such as economic opportunity, communicative self-representation, and preferred lifestyle. Expanding this concept, Wirth defined minorities as "a group of people, who, because of physical or cultural characteristics, are singled out from others in the society in which they live for differential and unequal treatment, and who therefore regard themselves as objects

of collective discrimination" (p. 347). This definition of minority goes beyond the use of numbers of proportion. For example, the 2002 US Census reports 12.1% of the population as African American, 12.5% Latino, etc., but this numerical underrepresentation is not necessarily intrinsic to the representation theory perspective. For example, women make up the larger proportion of people in most societies, but are still defined as minorities in many cases because of their economic and social oppression (Solomon, 1995; Wilson, 1996).

Instead, one of the key characteristics to minority status according to representation theory is that of restrictions on communicative self-representation (Habermas, 1984, 1987). Defined, communicative self-representation is the right to self-identify or refer to the self in self-chosen or preferred terms (Gans, 1979; Habermas, 1984; Waters, 1996). In contrast, having restrictions on communicative self-representation implies dependence and cooption into the worldview of the other.

A final characteristic of minority status as indicated by representation theories is the limitation in accessing a culturally preferred way of life (Foucault, 1986). This is most likely to be experienced when a dominant culture overshadows or excludes alternative cultural expressions (Frosh, Phoenix, & Pattman, 2000; Johnson, 1980). Under this definition, women, people of color, people of different religious backgrounds, gays and lesbians, and so forth have experienced this as both separate and intersecting populations (e.g. ethnic minority women, ethnic minorities of different religious, gay men of color).

Simultaneous Oppression

As discussed in the previous section, minority status is a concept that goes beyond both numerical representation and that of ethnic and racial groups. In fact, the number of categories that can be grouped together under the term minority status are not separate and isolated, and

individuals can occupy many minority (and majority) statuses simultaneously, experiencing what is termed as simultaneous oppression. One example of simultaneous oppression is that of racism and disability. Stuart (1992) notes that being an African American with a disability is a simultaneous oppression that is experienced daily in Western society. This experience separates these individuals from their African American able-bodied peers. In this example of African Americans with disabilities, Stuart identifies three ways in which these individuals experience distinct forms of oppression: limited or no individuality and identity; resource discrimination; and isolation within the African American community. In fact, Stuart notes that while White people with disabilities may experience marginalization, they do so as more accepted members of society than their African American counterparts.

Multiple Identities

Some scholars steer away from the concept of simultaneous oppression. Revisiting the example of African Americans with disabilities, Vernon (1999) argues that the concept of simultaneous oppression does not capture the day-to-day experience of such minority individuals because it does not incorporate the role of social class positioning. The concept of being a multiple "other" (Vernon, 1996c) results in both shared and oppositional alliances and interests between different groups of others. Thus, African Americans with disabilities, individuals of different sexual orientation, religion, age, and class status all experience oppression singularly, multiplicatively, and simultaneously depending on each context (Vernon, 1996a, 1996b).

In addition, an "oppressive group" can be experienced singularly, multiplicatively, and simultaneously as well. One example of this is the concept of triangularizaiton. Colloquially stated, it is the "pitting" of minority groups against one another in an effort to maintain the status quo of the dominant groups. One example of this is the classification of Asian Americans in

relation to Blacks and Whites. Asian American scholar Claire Kim notes that Asian Americans are commonly seen as "foreign" and "unassailable" to American culture but are simultaneously praised as the "model minority" in comparison to other "problem minority" (Black) groups (1999). Such logic helps keep the status quo of racial hierarchy (Kim, 1999). As one can see from these two definitions of simultaneous oppression and triangularization, one can be both in a minority group and oppressive group simultaneously.

These theories suggest vast complexity that is hard to conceptualize and completely understand. This complexity is important to keep in mind in future sections of the paper, especially the evaluation of cultural competency programs.

Defining Culture

Physician bias is not innate but the result of a vast socialization process that starts prior to medical school, is reinforced during medical education and extends well beyond into the profession. To begin to understand physician prejudice and bias within the clinical encounter, it is necessary to understand the culture in which current physicians work in and future physicians learn. The following sections will discuss and define the term "culture", not only in the use of defining "cultural competency curriculum," *for* medical education, but the actual culture that students and physicians *occupy themselves*. After defining culture, this term will be used to understand the various environments that medical students and physician occupy including school culture and biomedical culture. This will finally culminate in the description of the learning process of medical students within the context of the medical school curriculum.

Culture as a term is a difficult concept to define and comprehend and one that has been modified through the years. The formal use of culture as a scientific term started within the field of anthropology. From its origins, studying culture was understood as studying the basic social

units of premodern societies that shared common organizing principles (Erikison, 1987). In attempt to provide a more specific definition, anthropologist Edward B. Tylor stated that culture was "that complex whole which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society" (1924, p. 5). Kroeber and Kluckholm (1953), in an attempt to find a more universal definition of culture, tried to find the commonality between 150 different definitions of culture being used at the time. Within these 150 definitions they identified five core assumptions: (1) culture shapes how we explain and value our world, (2) culture is the lens through which we give our world meaning, (3) culture shapes our beliefs and influences our behaviors about what is appropriate, (4) culture is learned implicitly or explicitly; and (5) culture is all the shared, learned knowledge that people in a society hold (Helman, 2001; Loustaunau & Sobo 1997). All of these definitions show that culture is not limited to the notions of race, ethnicity or nationality. Sexual orientation, religious affiliation, age, socioeconomic status, occupational status, and geographical location are a few of many factors that can be included under the definition of "culture." With this understanding of culture, an individual can be from *more than* one culture, can occupy the identity of multiple cultures and identify with more than one culture than another depending on their context of place and time.

Yet, rather than searching for the common details within a given culture one can also simultaneously define it as a dynamic, ongoing process that operates in changing circumstances to enable group members to make sense of their world and operate in meaningful ways. This further removes culture away from the "ethnic," "racial," or nation-based definition. Conceptualizing culture in this way allows for a process that involves interpreting emergent behaviors (such as shared language, practice, and rituals) within a social grouping to describe the

culture of a group rather than describe the culture and then the people within. Under this definition, culture is thus non-prescriptive. Understanding culture in this manner is what Holliday (1999) refers to as "small-scale" approach.

Holliday's definition of culture allows the term to be applied to institutions such as medical education and (western) Biomedicine. The following sections will discuss the culture of both medical education and Biomedicine using Holliday's definition. Understanding education and medical systems as cultures will allow for a better assessment of the current institutions and curricula.

Biomedicine as a Culture

Using Holliday's definition of culture as that of shared language, practice and rituals within a social group, one can categorize medicine, in this case western Biomedicine, as its own culture. One way to characterize medicine as a culture is to look at the elements of beliefs, illness, resources, people and the environment of medicine (Gesler, 1991). Western Biomedicine shares common language, beliefs and value systems, and rituals different from other societies. Some of the core shared beliefs and perspectives of western Biomedicine include:

- Scientific rationality as basis for decision-making
- Emphasis on objective and numerical measurements
- Emphasis on physiochemical data
- Mind-body dualism
- Viewing disease as an entity
- Reductionism
- The emphasis on the individual patient rather than the family (Helman, 2001).

Overall these constructs fit with the common conception that medicine should focus on the aberration of what is deemed "normal" (ill health). These views would differ and counteract those that believe medicine should be subjective, personal, spiritual, have a mind-body interconnectivness, be whole-body and holistically based, interdisciplinary and be community

and family oriented. When one trains to become a doctor, he/she takes in most of these concepts and beliefs. By acquiring these elements into one's personal belief system, Helman (2001) states that this results in a common perspective on ill health, the Biomedical perspective. With each and every patient interaction, the physician represents this set of views. Every patient then will bring with them various levels of acceptance/ rejection of such beliefs held by western Biomedicine as reflected by the physician.

Overall, Biomedicine is based on basic biological science, which shares the perception of scientific rationality with its assumption that hypotheses must be capable of being tested and verified under objective, empirical, and controlled conditions. Yet what makes Biomedicine different from the basic biological sciences is the patient-provider interaction and relationship and the environment in which clinical decisions are made. In fact, the environment of medicine has a significant impact on the way western medicine is conducted and recent reports show that biomedical culture is a "key to the transmission of stigma, the incorporation and maintenance of racial bias in institutions, and the development of health disparities across minority groups" (Keusch, Wilentz & Kleinman 2006; Kleinman & Benson, 2006, p. 1673; Lee, Lee, Chiu & Kleinman 2005; US Department of Health and Human Services, 1999; Wailoo 2001).

One can easily surmise how the culture of Biomedicine does not require one to hold explicit cultural bias. Despite its basis in scientific rationality, medical decision-making is oftentimes made under time pressure and with limited information. Such information can be vast, disparate, inaccurate and incomplete. Time pressure and lack of quality information can lead to clinical uncertainty and eventually medical decisions that will reflect the subjective variability and preferences of the physician (Eisenberg, 1986; Wennberg, 1999). Such variability from the physician related to the understanding and interpretation of information from patients may

contribute to lack of patient trust and even disparities of care (Balsa & McGuire, 2001). It can be surmised that physicians interpret information and fill information gaps with prior beliefs: "priors" that differ by such factors as age, race/ ethnicity, gender and SES. Such priors are taught as a cognitive heuristic to medical students (IOM, 2002). Therefore a doctor must integrate both prior knowledge and new incoming knowledge for each and every patient encounter. Medical education has a formal model for such medical decision-making known as the " 'Bayes' rule." Under this model, the decision-maker (physician) uses prior and current knowledge and places relative weights on each based on the strength and quality of evidence (IOM, 2002). The IOM provides the following example:

> …Consider the case of a Latino male patient and a White male patient, both 50 years old and otherwise healthy. Suppose their doctor believes that the prior probability of either patient having heart problems is low and regards it to be the same for both patients. Now, suppose that the Latino and the White patient both experience exactly the same symptoms and describe their pain to the doctor. Will the doctor come to the same clinical decisions for the Latino and the White? Expression of pain symptoms differs among cultural and racial groups (Bonham, 2001). White doctors may simply understand pain reports better from members of their own racial group. When the White male talks to the doctor, the doctor relates easily to the patient's report; when the Latino tells his story, the doctor follows less well, and picks up fewer implicit clues. If we apply the terms of the Bayesian model of medical decision-making to the Latino patient, the reliability is lower because the potential error in the symptom report is higher than in the case of the White patient. With more uncertainty in the symptom report from the Latino, the Bayesian doctor puts more weight on his or her prior. The consequence could be that the White patient is referred for testing and the Latino patient is not (p. 167-168).

In this case, differences in care, and ultimately health disparities, can result even if there is a lack of physician prejudice. In this case, the physician used similar prior notions to fill in any clinical uncertainty to both patients, but recommended different courses of treatment action because the Latino patient presented his symptoms in a way that did not match the physician's prior knowledge. This also helps explain why, when even the issue of health care access (i.e. income and insurance) is controlled for in studies, health care disparities among minorities continue to

exist, partly due to providers failing to adequately match minority patients to the needed treatment.

Demographics of US Physicians

In contrast to the current and projected diversity of the general US population described in Chapter 1, the health care workforce currently provides a poor representation of the population they serve. Many minority racial and ethnic groups are poorly represented across various occupations and levels of education related to the training of future health professionals. Currently, minorities make up 30% of the general US population (and dramatically increasing as previously indicated), yet underrepresented minorities (URMs) currently only account for 7% of the active physician population (AAMC)[5], 5.8% of the dental population (ADEA), and 8.3% of the nursing population (BLS) (Schiff, 2006).

There is also a lack of diversity in the medical school classroom as well. In 1974, approximately a decade after the civil rights movement, only 10% of all medical school matriculates were underrepresented minorities (AAMC, 2000). This number actually decreased significantly in following years after the U.S. Supreme Court's *Bakke* decision in 1976 that outlawed the use of racial quotas in medical school. Currently, underrepresented minority medical students, representing the future physician population for the general patient population, made up only 12.6% of students in the 2001-2002 academic year (Barzansky & Etze, 2002). In fact, the proportion of underrepresented minority students has decreased again since 1994, around the time policy shifts have focused on changing affirmative action policies.

As one goes up the career ladder in academia, one notices a "glass ceiling" effect for racial minorities as well. Specifically, the "glass ceiling" effect is defined by the U.S.

[5] This excludes physicians who are internationally trained. This only includes physicians who are trained in the US and currently practicing in the US.

Department of Labor as “those artificial barriers based on attitudinal or organizational bias that prevents qualified individuals from advancing upward in their organization into management-level positions." (Report on the Glass Ceiling Initiative, 1991, p. 1). Minority faculty representation is particularly dismal. In 1997, only 3.9% (or 3,417 out of 87,197) of full-time medical faculty members were minorities, despite research showing that they have an important influence on the number and quality of minority medical students (AAMC, 1997). Studies published in the *Journal of the American Medical Association* suggest that minority faculty are less likely to be given tenure track/ tenure position and hold senior academic rank (Fang, Moy, Colburn, & Hurley, 2000; Palepu, Carr, Friedman, Amos, Ash & Moskowitz, et al. 1998). This lack of ethnic diversity at the educational level indicates not only that there will continue to be an under representation of minority physicians in the immediate future, but few minorities in faculty leadership positions for the long-term future as well.

As noted previously, racial diversity is only one way to measure diversity and representation in general. With that noted, racial composition is not the only type of diversity lacking in current US medical schools. The Association of American Medical Colleges (AAMC) has published annual *All Schools Summary Reports* from their Matriculating Student Questionnaire since 1999. This demographic survey is extensive, asking student information such as: extracurricular activities, career plans and interests, background/ demographic information, and financial information (e.g. loans, educational debt). The survey is especially useful as it is given to all entering medical students for that particular year and has a near 100% response rate. Looking at the 2006 data, one can compose an “average” entering medical student. Table 1 summarizes demographic information. The “typical” entering medical student in 2006 was an early twenty-something year old single White female who entered medical school

immediately following undergraduate graduation. Such a student has a mother with a bachelor's degree or higher, a father with a masters or even professional (medicine, law, dental, etc.) degree, no educational financial debt, and a parental income of $149,779.

Table 1

Entering U.S. Medical Student Demographics, 2006

Characteristic	Percentage or Average
White	72.5%
Female	50.3%
Under Age 25	85%
Single, Never Married	82.5%
Gap of 1 year or less between college and entrance into medical school	69.5%
Mother's Highest Educational Level	Bachelors' Degree (half above, half below)
Father's Highest Educational Level	Master's Degree (half above, half below)
Average Parental Family Income	$149,779.00
No Undergraduate Financial Debt	80% (Those who do average $5,000 in student loans)

Chart compiled from information provided by the AAMC, 2006.

From this information, one cannot only see that the medical student population is not ethnically and racially diverse, but comes from an upper level, professional class. Few students have had full time non-medical occupations prior to their entering medical school, nor any non-medical experience between college and medical school. Such a composition suggests that many future physicians will be treating patients who not only differ from them ethnically and racially, but just as importantly socially and economically. Future physicians may be limited in their ability to interact with patients with such a narrow scope of personal experience.

Diversity of the healthcare provider and educator population is integral to increasing both access and quality of medical care. Related to the issue of patient trust (to be discussed more in the next section), minority patients tend to prefer to be seen by minority physicians. Such is the evidence in the study of physician-patient caseloads. One study of physicians' practices in

California showed that over one-half (52%) of patients of African-American physicians were African American, compared to 9% of non African-American physicians. Among Hispanic physicians, average caseloads approached 55% Hispanic patients, compared to 20% among non-Hispanic physicians (Komaromy, Grumbach, Drake, Vranizan, Lurie, Keane, et al., 1996). This is a startling statistic when one is reminded that African American and Hispanic physicians only make up about 6% of the physician workforce. In addition, minority physicians see substantially more uninsured or Medicaid patients (53% versus 40%) (Brotherton, Stoddard & Tang, 2000).

The IOM cites ethnic and racial diversity in the health care professions to be important beyond the direct physician-patient interaction. They cite three examples:

- Health care professionals from racial and ethnic minority groups have generally been more successful in recruiting minority patients to participate in clinical research. Such efforts are critical to link scientific advancements with quality service delivery in underserved communities.
- …Racial and ethnic diversity of health professions faculty and students helps to ensure that all students will develop the cultural competencies necessary for treating patients in an increasingly diverse nation (Association of American Medical Colleges, 1998).
- Racial and ethnic minorities disproportionately receive medical care in hospital emergency settings. Such care is more costly than routine medical care and preventative health services. Healthcare professionals from minority and underserved communities may be better poised to tailor preventive health and primary care programs and services to minority populations, thereby reducing associated costs (IOM, 2002, p 122).

The Clinical Encounter and Health Disparities

Patient Trust

Trust is the cornerstone of the provider-patient relationship and plays a significant role in the quality of health-care delivery and outcomes. Yet public trust of the US healthcare system has waned in the last several decades. The reasons for lack of public trust are plentiful: the increased presence of managed care, growth of for-profit medicine, growing medical sophistication of patients and media coverage of medical errors and research scandals (Ahern & Hendryx, 2003; La Veist, Nickerson & Bowie, 2000; Mechanic, 1996).

In addition to all this, researchers have identified trust as a factor predictive of positive health outcomes (Kao, Green, & Davis 1998; Pederson, 2002; Safran, Taira & Rogers 1998). Specifically, trust of both the provider and the medical institution by the patient has been associated with increased physician satisfaction, improved provider-patient communications, greater adherence to medical recommendations, and the continuity of primary care.

Scholars have shown that lack of patient trust is more evident among non-White groups (La Veist, Nickerson & Bowie, 2000). Research is particularly extensive on African American/ White comparisons. Studies have shown that African Americans tend to have less trust of their physicians because they fear that, because of their race, physicians may make decisions that are detrimental to them (Doescher, Saver, Franks & Fiscella, 2000; Kao, Green, Davis Koplan, & Cleary, 1998). Even so, it is also important to note that the majority of African American patients trust their doctors, but a significant minority (and greater than that of White Americans) do not trust their physicians.

While most research on ethnic and minority trust of medicine is focused on African Americans, preliminary research shows that significant distrust of the health care system extends to other ethnic and racial groups and sometimes differs by gender. Similar to African Americans, Hispanics are less likely to donate organs than are Whites (McNamara, Guadagnoli & Evanisko, 1999). Native Americans, because of recent history, are particularly distrustful of genetic research (Sze & Prakash, 2004), having been abused by several medical research projects. At one point during the 1970s more than 25% of Native American women were sterile (Bellanger, 1982; Dillingham, 1971a; Dillingham, 1971b). Other studies show that Asian Americans are less satisfied with their care than White Americans and less likely to trust their physician (Ngo-Metzer, Legedza & Phillips, 2004; Tiara, Safran & Seto, 1997). Ngo-Metzer, et al. (2004) found

that rates of dissatisfaction and trust were linked to Asian American patients who felt that the physician did not understand their backgrounds or values. In terms of gender, there are studies that show that African American and White women are less likely to donate blood than their male counterparts (Boulware, Cooper, Ratner, LaVeist & Powe, 2003).

Growing research shows that other minority groups have a high level of healthcare provider distrust as well. As noted in the section under health disparities, those of non-heterosexual orientation have been institutionally silenced generally and medically specifically. In a 2001 article on physician-patient relationships with patients from the lesbian and gay community, Stein and Bonuck (2001) found that of those who did not disclose their sexual orientation, nearly half (47%) did so because they were "concerned about [a] bad reaction or treatment" (p.91) from the provider.

Such distrust is not arbitrary and has historical links. The most cited example is that of the famed 40 year Tuskegee Syphilis study in which US public health officials deliberately denied treatment to 399 Black men in Alabama "in order to document the natural history of the disease" (Gamble, 2003, p. 1773). Many Black men were allowed to be physically debilitated and even die in the name of medicine. Latina women are another group that also had a long history of reproductive abuse in the US. In 1969, a family planning clinic in Austin, Texas provided what poor Chicana women thought were contraceptives while in fact 76 patients received placebos (Veatch, 1971). In addition, there were active recruiting efforts in the mid 20th century by the United States to sterilize Puerto Rican women in both Puerto Rico and New York City and Mexicans in California and the Southwest (Zambrana, 1994) . More recent political action such as the proposal of California Proposition 187 denied undocumented immigrants access to public health care services. Although it was never enacted, Proposition 187 made many

Latinos view health care workers as immigration officers and thus many Latinos were more reluctant to seek healthcare workers out in times of medical need (Burdman, 1994; Romney, 1994).

Such historical examples of mistrust illustrate the need for action on behalf of health care professionals to develop a more trustworthy healthcare system. One of many action steps is the development and implementation of cultural competence education to allow providers to better understand the "history, culture, experiences, preferences and health behaviors of their minority patients" (Gamble, 2006, p. 443).

Provider Bias

Despite great strides gained from the civil rights movement over 50 years ago, prejudice and bias exist in various forms at all levels of society and manifests itself in both explicit and implicit ways. Defined by Dovidio, Brigham, Johnson & Gaertner, (1996) prejudice is an "unjustified negative attitude based on a person's group membership". While prejudice goes against the very ethical code of professionalism for healthcare professionals, it is important to realize that they, like other members of society, may not recognize manifestations of prejudice in their own behavior. The IOM lists a variety of ways implicit prejudice may make itself self-evident in healthcare providers including: "nonverbal behaviors reflecting anxiety (e.g., increased rate of blinking), aversion (e.g., reduced eye contact) or avoidance (e.g., more closed postures) when interacting with minority rather than White patients" (2002, p. 162).

Currently, there is a small but growing amount of evidence that such racial and gender-based bias on behalf of the physician can have a significant influence on physician decision-making including diagnosis and treatment. Other sociopolitical factors have received little to no investigation. Perhaps the most cited study in medicine on the subject is Schulman, et al. (1999).

Going beyond the current literature that simply showed clinical treatment differences by race and gender of cardiovascular disease (1999), this landmark study examined "*the extent to which physicians are responsible for the differences in treatment recommendations with respect to race and gender*" (p. 619). During the study, all "patients" (actors were used to control for consistent emotion and presentation of symptoms) were controlled for income, occupation, and insurance status. Using clinical video vignettes with patients of different age, gender, and race, primary physicians were asked about their decisions related to the management of the problems as well as an assessment of the patient's emotional, intellectual, and communication characteristics. The results showed that physicians were less likely to recommend cardiac catheterization to both women and Blacks by 40% compared to men and Whites. As a Black female, one was 60% less likely to be recommended for cardiac catheterization.

Another study conducted by Weisse, Sorum, Sanders and Syat, (2001) also used patient vignettes manipulating for race and gender. This study observed the *physician's* gender in relation to treatment. The researchers found that male physicians prescribed higher doses of hydrocodone for White patients than Black patients while female physicians prescribe higher dose of analgesic for Black patients than White patients. In this study, the treatment regimens were nearly the opposite, imply[ing] that male and female physicians may react *differently* to gender and/ or racial clues. The study implies that healthcare providers' perceptions and views are influenced by a wide range of factors, adding further complexity to the patient-physician interaction. This complexity between both the physician and patient background is explored in a few other studies (Rathore, Berger, Weinfurt, Feinleib, Oetgen, Gersh, et al., 2000).

Overall, while the studies linking provider bias to different treatment options are currently few in number, they suggest several important implications. The first is that physicians

play a personal role in or by providing the inconsistency of treatment recommendations for patients of different genders, races, and ethnicities (Shulman el al., 1999; Thamer, Hwang, Fink, Sadler, Bass, Levey, et al., 2001; Weisse et, al., 2001). In addition, treatment recommendations for different patients may be influenced by the physicians' own gender and race (Finucane & Carrese, 1990; van Ryn and Burke, 2000; Wisse et. al, 2001). Finally, such differing treatment recommendations may be traced to differing physician perceptions based the patients' race and gender (Abreu, 1999; Finucane & Carrese 1990; Rathore, et al., 2000; van Ryn & Burke 2000).

There are several prominent theories that help to explain how individuals maintain negative perceptions of those in more disadvantaged socioeconomic groups/ minority populations. Perhaps the most prominent and most widely used of these theories (and one that this study will use) is what social psychologists refer to as the *Just World Hypothesis* (Lerner, 1980; Rubin & Paplau, 1975). As summarized by Balcazar, et al., (2007):

> According to this hypothesis, people are often eager to convince themselves that beneficiaries deserve their benefits and victims their suffering. This means that people have a strong desire or need to believe that the world is an orderly, predictable, and just place. Therefore in order to plan our lives or achieve our goals we need to assume that our actions will have predictable consequences. Moreover, when we encounter evidence suggesting that the world is not just, we quickly act to restore justice by helping the victim or we persuade ourselves that no injustice has occurred. Rubin and Peplau (1975) found that people who have a strong tendency to believe in a just world also tend to be more religious, more authoritarian, and more conservative. They are also more likely to admire political leaders and existing social institutions, and more likely to have negative attitudes toward unprivileged groups. To a lesser but still significant degree, the believers in a just world tend to "feel less of a need to engage in activities to change society or to alleviate the plight of social victims" (p 83).

This viewpoint is argued to be one that perpetuates prejudice and bias against people of lower and/ or marginalized socioeconomic backgrounds.

Stereotyping

While the "priors" cognitive heuristic explains some of the disconnect that exists in the patient-provider relationship, it is important to address the issue of stereotypes and how they affect physician attitudes and treatment.

Stereotyping is the process in which people use social categories (e.g., race, gender) in acquiring, processing, and recalling information about others. Stereotypes can be beneficial in that they help in orientation and are used to serve important functions. For example:

> [Stereotypes] help organize and simplify complex or uncertain situations and give perceivers greater confidence in their ability to understand a situation and respond in efficient and effective ways. People tend to categorize others into social groups because of the complexity of the social environment and our limited cognitive resources to organize and manage this complexity. These categories are often based on readily apparent, salient similarities, such as physician characteristics associated with gender or race (Dovidio, 1999).

Stereotyping comes from the human need to understand, predict, and control one's environment (Mackie, Hamilton, Susskind & Rosselli, 1996). While stereotyping exists to serve a function, such categorization is systematically biased and limited. In addition, studies show that when people are categorized into groups, the differences between individuals within the group are minimized and often ignored in decision-making processes (Fiske, 1998) leading to stereotypes. This process is not benign as it leads to further generalization beyond the original categorization.

The consequences for such categorization are diverse and great. Categorization leads people to choose one group over the other, whether or not they really share characteristics (explicit or implicit) between groups (Operario & Fiske, 2001). Furthermore, social categorization leads people to choose groups that have greater social influence and resources. "Oneness" and empathy is created within groups and less so for outside groups. This can create conflict. In addition, stereotyping not only influences behaviors consistent with such stereotypes,

but influences the way information is remembered. When people do not have a strong memory of particular information about a group member, they recall information based on stereotypes (Dovidio, 1999). In addition, one does not have to consciously endorse stereotypes to have it affect his or her thoughts, feelings, and outward behaviors. This is the difference between "explicit" (conscious) stereotyping and "implicit" (unconscious) stereotyping. As Dovidio (1999) notes:

> In the United States, because of shared socialization influences, there is considerable research evidence that even well-meaning Whites who are not overtly biased and who may not believe that they are prejudiced typically demonstrate, on average, unconscious implicit negative racial attitudes and stereotypes (extracted from IOM, 2002).

Negative stereotypes, both explicit and implicit, can contribute to healthcare disparities in a number of ways. As noted before, while it can be reasonably assumed that most health care workers do not have explicit biases and even abhor prejudice, they typically display unconscious implicit negative racial attitudes and stereotypes (Dovidio, 1999). Such observations are seen in healthcare and contribute to health disparities. In addition, such stereotyping may actually be conscious and accepted as part of the occupation. As the IOM notes:

> In some cases, healthcare providers may be consciously aware of their negative stereotypes of minorities, but may nonetheless view these stereotypes as accurate, functional, and appropriate for their clinical work. In these cases, research…suggests that these providers will selectively attend to and recall information that confirms that their stereotypes, and will tend to allow such stereotypes to enter into clinical decisions regarding these diagnosis and appropriate course of treatment. (p. 172)

Even for those who do not practice this train of thought, research has noted that subtle and unintentional types of biases exists even among highly educated individuals such as physicians (Biernat & Dovidio, 2000). Stereotypes are strongly connected to heuristics and such heuristics are more often employed under stressful cognitive situations (Mackie, Hamilton, Susskind & Rosselli, 1996). A specific example of the influence of stereotyping on health care disparities is

that physicians believe Blacks are less likely to comply with treatment and engage in destructive health behaviors (van Ryn & Burke 2000). Such beliefs may lead doctors to be less likely to recommend treatment for Blacks or make an effort to discourage unhealthy behaviors. This can create a cycle in which minorities such as Blacks have lower health care statuses, confirming physician beliefs, thus causing them to be less likely to prescribe treatment or encourage healthy behaviors.

Medical School as a Culture

While bias and stereotyping becomes evident in the process of providing medical care when the physician is interacting with the patient, such biases are cultivated much earlier in life and are reinforced in medical school. It should be noted that both undergraduate medical education and the medical profession is a different culture in itself. Branch, Kern, Kaidet, Weissmann, Gracey, Michel, et al., (2001) note that becoming a doctor involves the integration of values and attitudes into the knowledge and skills of the medical schools in which they learn. Students undergo a process of socialization *into* the culture of medicine. In this way, medical school is a social system with its own culture which Banks (1993) notes consists of "institutional norms, social structures, cause-belief statements, values, and goals" (p.22):

> The school culture…communicates to students the school's attitudes toward a range of issues and problems, including how the school views them as human beings and its attitudes toward males, females, exceptional students, and students from various religious, cultural, racial, and ethnic groups (p.24).

Specifically, the school's culture can be defined as the historically transmitted patterns of meaning that include the norms, values, beliefs, ceremonies, rituals, traditions, and myths understood, perhaps in varying degrees, by members of the school community (Stolp & Stuart, 1994). This system of meaning often shapes what people think and how they act.

It is especially important to note schools as a culture because it shows that culture is not just "out there" (i.e. "those patients of X culture") but also "right here" (e.g. the medical field) (Erickson, 1996). In *Taking Stock/Making Change*, Erickson discussed that part of the "right here" culture that includes "visible" and "invisible" culture and the importance of these differences for planning for change.

Manifest/ Formal versus Hidden Curriculum

A school's culture is grossly reflected in its curriculum. In this sense it is important to distinguish the concept of both explicit and manifest curriculum. As Banks and Banks (2001) distinguish, manifest curriculum includes explicitly administered tools such as guides, textbooks, bulletin boards, and lesson plans while hidden curriculum is that which no teacher teaches, but every student knows. More specifically, hidden curriculum is the unstated social and academic norms of a school or program, often at odds with the stated manifest curriculum (Snyder, 1973). One example of this is that one of the stated goals of an open university is to foster collaboration and open communication, but when it comes to grades, students learn of an underlying "competitive game." According to Erickson (1987), one of the main reasons for looking at schools as a culture, both the manifest and the hidden, is the idea of culture as shared. This way of thinking reveals the actions and patterns and the underlying assumptions that might otherwise go unnoticed.

The concept of hidden curriculum has not been lost on medical school educators and there have been a number of efforts in the 20th century alone to reform the medical curriculum (Hafferty, 1998). Hidden curriculum in medical education can consist of such elements of "unintended messages communicated in lectures and other formal teaching; interpersonal interactions between faculty and students…; and the larger culture and structure of the medical

establishment" (Hafferty, 1998, p. 403; Hafferty & Franks, 1994, p. 861). Hidden curriculum plays a particularly important role when one tries to teach cultural competency. One medical school, the University of Minnesota, examined how its curriculum may embody the elements of hidden curriculum through analysis of case examples given to students. In their study, they found that there was a pattern of presentation of demographics, specifically, that there was a lack of mention of sexual orientation, race, or ethnicity (Turbes, Krebs, & Axtell, 2002). They found these findings to be inconsistent with their manifest multicultural curriculum. In his work, Hafferty suggests that such curriculum may be more influential than the structured, more formal curriculum.

Summary of Models for Training Culturally Competent Health Care Professionals

Providing the definition for cultural competence is not enough to make individuals culturally competent. Once a definition for cultural competency has been decided on, it is necessary to further develop the concept to understand what components are related to the definition. The fields of psychology and nursing have investigated the need for cultural competency far longer and more in-depth than that of medicine. There are currently a large number of models in use in the fields of nursing, psychology, allied health, and medicine. While there are a large number of models for understanding cultural competency, there are also a great number of similarities among them. This section will provide a summary of these models and discuss a few selected ones in more detail.

Balcazar et al. (2007) conducted a review of cultural competency models for all fields within and outside the health professions and found 26 models (summarized in Table 2). In their review they found that the majority of models were from the fields of nursing or health care (50%), followed by counseling/ psychology (40%), and social work (10%) (p. 20). This trend is

theorized to be so because of the high level of professional-client/patient contact in these fields. In addition, many health/helping professional organizations:

> like rehabilitation counseling (Commission on Rehabilitation Counselor Certification, 2001), social work (American Social Work Association, 2000) and psychology (American Psychological Association, 2003) have revised their code of ethics to include respect for cultural diversity as part of the professional standards for education, training, research and practice. For example, one of the guiding principles for psychologists is to "recognize that, as cultural beings, they may hold attitudes and beliefs that can detrimentally influence their perceptions of and interactions with individuals who are ethnically and racially different from themselves" (APA, 2003, p. 382) (Balcazar, et al. 2007).

Interestingly enough, Balcazar also notes that while all of these models were meant to be used in professional practice, only two have been empirically tested: that by Camphina-Bacote and Kim-Goodwin, Clarke and Barton (Camphina-Bacote, 1999; Kim-Goodwin, Clarke & Barton, 2001). These two models will be covered more in detail later in this section. Balcazar et al. also notes that some of the models included components that were hard to operationalize (e.g. cultural flexibility and cultural encapsulation).

The third characteristic of these models that Balcazar et al. note is that the models included a considerable number of components that overlap. The most common components between the models were (a) cultural awareness, (b) cultural knowledge, (c) cultural skills, (d) cultural practice, and (e) cultural competence desire.

Table 2

Cultural Competence Models Summary (Balcazar, et al. 2007)

AUTHORS	MODEL COMPONENTS	INTENDED UTILIZATION	FIELD
(1) Brach C.& Fraser I.(2000)	1) Interpreter services 2) Recruitment and retention 3) Training 4) Coordinating with tradition healers 5) Use of community health workers 6) Culturally competent health promotion 7) Including family and/or community members 8) Immersion into another culture 9) Administrative and organizational accommodations	To enhance the Practice of health care among professionals and clinicians	Health care
(2) Byars-Winston, A., & Fouad, N. (2006)	1) Step 1: Establishing a relationship 2) Step 2: Identity career issues 3) Step 3: Cultural impact on career issues 4) Step 4: Goal setting 5) Step 5: Interventions 6) Step 6: Decision making 7) Step 7: Implementation and follow up Metacognition skills: 1) Implementing a plan 2) Self-monitoring 3) Evaluating the plan	To enhance career counselors' multicultural competence in the counseling process	Counseling
(3) Carballeria, N. (1997)	The LIVE and LEARN model of cross-culture attitudes and Client reactions fall into: 1) Superiority 2) Inferiority 3) Incapacity 4) Universality 5) Sensitivity 6) Competence	The LIVE and LEARN model was intended to promote cultural competence in the delivery of family services	Social Work

Table 2 (cont.)

AUTHORS	MODEL COMPONENTS	INTENDED UTILIZATION	FIELD
(4) Coleman, H. L. (1995)	Proposes 6 strategies to cope with cultural diversity: 1) Separation of the cultures 2) Fusion of the cultures (mix but retaining one's culture) 3) Integration of the cultures 4) Alternation from one culture to the other 5) Acculturation 6) Assimilation in the other culture	Intended to allow counselors to cope with cultural diversity in the counseling situation	Counseling
(5) D'andrea M., Daniels J. (1991)	1) The cultural encapsulation level -The culturally entrenched stage - The cross-cultural awakening stage 2) The conscientious level of counselor education. - The cultural integrity stage -Infusion Stage The model also incorporates multiple factors for a "respectful" counseling relationship, including religion, economic class, sexual identity, psychological maturity, racial identity, unique physical characteristics, location of residence and language differences.	The model provides counselor-educators with a framework that recognizes the complexity of human development and its diversity. It also serves as a basis from which other counselors can begin to consider the general state of multicultural counseling training in the profession at this time.	Counseling
(6) Glockshber, E.(2005)	1) Cultural beliefs 2) Cultural Knowledge 3) Cultural Skills	The objective of this study was to explore alternative ways for counselors to better understand how they perceived multicultural competencies.	Counseling

Table 2 (cont.)

AUTHORS	MODEL COMPONENTS	INTENDED UTILIZATION	FIELD
(7) Hanna, F. J., Bemak, F. & Chung, R. C. (1999)	Follows the concept of wisdom, to propose the following characteristics: 1) Affective and awareness empathy 2) Show of concern and recognition of affect 3) Sagacity (listening skills and awareness of relationships) 4) Cognitive –dialectical reasoning 5) Efficient coping skills 6) Tolerance of ambiguity 7) Perspicacity 8) Problem solving 9) Metacognition (knowledge and knowing)	Wisdom is more than knowledge, it is a transcultural concept considered in relation to culture, context, dialectical thinking, awareness, Metacognition, interpersonal insight and empathy.	Counseling
(8) Harris-Davis, E. & Haughton, B. (2000)	Guide to develop multicultural nutrition counseling competence: 1) Multicultural nutrition counseling skills 2) Multicultural awareness 3)Multicultural food and nutrition counseling knowledge	1) Dieticians in supervisory or administrative positions can use the model to promote multicultural competence of their staff. 2) Dieticians and dietetics educators can use the model to organize self-evaluation and professional education	Dieticians

Table 2 (cont.)

AUTHORS	MODEL COMPONENTS	INTENDED UTILIZATION	FIELD
(9) Jezewski & Sotnik, 2001, 2005	Providing cultural competent disability services requires that professionals at all levels play a role. The model has three stages and intervening factors. Stage 1: Problem or need for brokering Stage 2: Strategies/interventions Stage 3: Outcomes: Resolution or lack of resolution.	The concept of cultural brokering, defined as the act of bridging, linking, and mediating between groups or persons of differing cultural backgrounds for the purpose of reducing a conflict or producing a change.	Nursing
(10) Kim-Godwin Y.S., Clarke P.N., & Barton L. (2001)	1)Cultural competence 2)Health care systems 3)Health outcomes	Primarily designed to predict public health outcomes of culturally competent health care in communities. First construct of the model developed after a concept analysis following development and testing of Cultural Competence Scale(CCS). Other two based on literature review.	Nursing
(11) Lewis, A. N. (2006)	1) Adjustment to the disability (acceptance, resources and responsibility for change) 2) Stage of personal development (actualization of self-esteem, sense of belonging and physiological adjustment) 3) Cultural identify (social, emotional, spiritual, mental, physical functioning)	Enhance the effectiveness of VR counselors interventions with minorities with disabilities	VR Counseling

Table 2 (cont.)

AUTHORS	MODEL COMPONENTS	INTENDED UTILIZATION	FIELD
(12) McPhatter, A. R. (1997)	The model has 3 main components and multiple factors: 1. Enlightened consciousness (re-orientation of the case worker's primary worldview) 2. Grounded knowledge base (history and culture, dynamics of oppression, racism, sexism, classism and other forms of discrimination, family structure and functioning, etc) 3. Cumulative skills proficiency (ability to engage in the cultural reality of the client in a genuine, accepting manner)	The model was designed to help child welfare workers become culturally competent	Social Work
(13) Moffitt, P., & Wuest J. (2002)	Model 1 The integration of culture: 1) Inquisitive way of being 2) Receptive way of being 3) Interactive way of being 4) Reflective way of being Model 2 Modern knowledge model 1) Traditional knowledge 2) Scientific knowledge 3) Individual and community values	Implications for practice are, emphasis should be placed on relationship development that sees each client as unique and different, requiring care that is based on difference rather than sameness.	Nursing

Table 2 (cont.)

AUTHORS	MODEL COMPONENTS	INTENDED UTILIZATION	FIELD
(14) Nystul , M.S. (1999)	Proposed the Multicultural Counseling and Therapy Model (MCT): 1) Addresses contextual issues in the treatment 2) Examines the client's stage of cultural identity development 3) Counselors should identify the values and experiences of the client 4) Encourages counselors to expand their helping roles to address additional needs of the client 5) Attempts the liberation of consciousness from a relation-contextual perspective.	Acknowledges that culture is a critical element of the counseling relationship and attempts to prepare counselors for becoming more effective in their interactions with clients from various cultures.	Counseling
(15) Ogbu J. (1981)	1) Effective environment 2) Cultural task 3) Dominant adult categories and instrumental competencies 4) Native theory of success 5) Native theory of child rearing 6) Social organizations and relations 7) Child rearing techniques in various settings. 8) Dominant child/ types and competences	This is a framework for studying child-rearing and developmental issues in a way that is not ethnocentric.	Social Work
(16) Orque, M. (1983)	1) Diet 2) Family life process 3) Healing beliefs and practices 4) Language and communication process 5) Social groups' interactive patterns 6) Value orientations 7) Religion 8) Art and history	This model is presented to provide a holistic cultural perspective for the nurses.	Nursing

Table 2 (cont.)

AUTHORS	MODEL COMPONENTS	INTENDED UTILIZATION	FIELD
(17) Papadopolous I., & Lees S. (2002)	1) Cultural awareness 2) Cultural competence 3) Cultural knowledge 4) Cultural sensitivity	Also focuses on two layers of cultural competence: Culture-generic and Culture specific competence. The relationship between these is dynamic and spiral.	Nursing
(18) Poole, D. L. (1998)	Cultural competence requires 5 components: 1) Knowledge of the context, influence of the family and social networks 2) Skills to be able to adjust to work in cross-cultural situations 3) Adjustment in diagnosis and treatment 4) Change policy to hire staff from the target population and allow staff to engage in the target community 5) Having the right values	Culturally competent professional should be able to recognize similarities and differences in the values, norms, customs, history, and institutions of diverse groups of people.	Social Work and Health care
(19) Pope, & Raynolds (1997)	The dynamic model of student affairs competence has 7 core competencies: 1) Administration and management 2) Multicultural awareness, knowledge and skills 3) Helping and advising 4) Assessment and research 5) Teacher and training 6) Ethics and professional standards 7) Theory and translation	These are the requisite qualities and abilities for efficacious student affairs practice. The level and depth of competence in these areas may vary with the individual but minimal competence is required.	Counseling

Table 2 (cont.)

AUTHORS	MODEL COMPONENTS	INTENDED UTILIZATION	FIELD
(20) Purnell L. D. (2002)	1) Overview, Inhabited localities, topography 2) Communication 3) family roles and Organization 4) Work force issues 5) Bio-culture ecology 6) High risk health behaviors 7) Nutrition 8) Pregnancy and child bearing practices 9) Death rituals 10) Spirituality 11) Health care practices 12) Health care practitioners	The model can be used in any health care setting and applied to a broad range of empirical experiences and can foster inductive and deductive reasoning in the assessment of cultural domains for the provision of culturally competent care.	Health Care
(21) Salimbene, S. (1999)	1) Ethnocentricity 2) Awareness and sensitivity 3) Ability to refrain from forming stereotypes 4) Acquisition of knowledge 5) Acquisition of skills	The model helps to support and improve cultural competency throughout an integrated health care system.	Nursing
(22) Steenbarger, B. N. (1993)	The process of multicontextual counseling has several stages: 1) Engagement in the client's life context 2) The counselor facilitates new modes of experiencing, understanding and acting 3) Help professionals develop skills that enable them to interact effectively and sensitively with those who are different 4) Raise awareness about problems in the person-environment level 5) Attempt to modify communities so they become more supportive of desired behaviors 6) Help community members dealt with decision makers in order to help the disempowered	This is a review if brief therapy principles applied to the context of multicultural counseling	Counseling

Table 2 (cont.)

AUTHORS	MODEL COMPONENTS	INTENDED UTILIZATION	FIELD
(23) Sue, D. W., Arredondo, P, & McDavis, R. (1992)	The dimensions of cultural competence have three components: beliefs and attitudes; knowledge; and skills. These are applied to the following guidelines: 1) Development of counselor's awareness of own assumptions, values and biases 2) Understanding the worldview of the culturally different client 3) Developing appropriate intervention strategies and techniques	These are the guidelines proposed by the Association for Multicultural Counseling and Development on the basis of the Professional Standard Committee recommendations.	Counseling
(24) Suh, E. E. (2004)	Attributes: 1) Cultural ability; 2) Openness to cultural diversity; 3) Cultural flexibility Antecedents: 1) Cognitive domain; 2) Affective domain; 3) Behavioral domain; 4) Environmental domain Consequences: 1) Receiver based variables; 2) Provider based variables 3) Health outcomes variables.	This model provides a theoretical guide for developing strategies to achieve culturally competent care in nursing practice and research.	Nursing

Table 2 (cont.)

AUTHORS	MODEL COMPONENTS	INTENDED UTILIZATION	FIELD
(25) Wells, M. I. (2000)	Cultural competence requires openness, flexibility and ability. The model has antecedents and consequences: Antecedents: Cognitive domain: Cultural awareness and cultural knowledge Affective domain: Cultural sensitivity Behavioral domain: cultural skills Environmental domain: cultural encounters Consequences: Receiver-based variables: improved quality of life, health care satisfaction and adherence to treatment Provider-based variables: personal and professional growth Health outcomes: improved quality of nursing performance; cost effectives.	CMD model allows individuals and institutions to assess growth in cultural development from the cognitive through the affective phases.	Nursing
(26) Willis W.O.(1999)	1) Knowledge of ones own cultural affiliation: beliefs, values and life ways 2) Knowledge of others: beliefs, values and life ways 3) Non threatening/ non fear provoking interaction 4) Tolerance 5) Inclusion 6) Appreciation/ acceptance 7) Competence	The progression towards achievement of components is a building block approach. Framework developed to provide culturally competent nursing care during the perinatal period	Nursing

Cultural Competency Models in Detail: The Campinha-Bacote Model

One popular model of cultural competency in nursing is that from Campinha-Bacote. Developed in 1991 and revised in 1998, this model consists of five constructs: cultural desire, cultural awareness, cultural knowledge, cultural skill, and cultural encounters. There are several assumptions to this model:

1. Cultural competence is a process; not an event.
2. The process of cultural competence consists of five-interrelated constructs: cultural desire, cultural awareness, cultural knowledge, cultural skill, and cultural encounters.
3. The key construct of cultural competence is cultural desire.
4. There is more variation within cultural groups than across cultural groups.
5. There is a direct relationship between a healthcare professional's level of cultural competence and their ability to provide culturally responsive healthcare services.
6. Cultural competence is an essential component in rendering effective and culturally responsive care to all clients.

Campinha-Bacote describes the five constructs as follows:

1. Desire: Campinha-Bacote defines cultural desire "as the motivation of the healthcare professional to 'want to' engage in the process of becoming culturally competent; not the 'have to'." (1998). In addition, Campinha-Bacote notes that cultural desire requires personal sacrifice:

   > One must be willing to sacrifice one's prejudice and biases towards culturally different clients in order to develop cultural desire. This sacrifice also involves the moral commitment to care for all clients, regardless of their cultural values, beliefs or practices. However, this task may be difficult when caring for challenging clients who engage in behaviors that may be in direct moral conflict with the healthcare professional (e.g., abortion, spous[al] abuse, sexual additions) (2003).

2. Awareness: under the model created by Campinha-Bacote, cultural awareness "is the self-examination and in-depth exploration of one's own cultural background" (1998). Such a process involves recognizing one's biases, prejudices and assumptions about individuals who are different. If a healthcare provider lacks awareness, there is a risk of cultural imposition. Defined by Leininger (1998) cultural imposition is the tendency to impose one's beliefs, values and patterns of behavior upon another culture.
3. Knowledge: This involves seeking a sound educational base about culturally diverse groups. This includes the integration of health-related beliefs, practices, cultural values, disease incidence and prevalence, and treatment efficacy (Lavizzo-Mourey, 1996). Integrated together this should help understand the patient's worldview.
4. Skill: Cultural skill is the ability to collect relevant cultural data regarding the patient's problem and accurately perform a culturally-based, physical assessment (Campinha-Bacote, 1998). This includes learning the skills of how to conduct a cultural assessment and perform culturally-based physical assessments (Capinha-Bacote 2003).

The Culturally Competent Community Care (CCCC) Model

The other only empirically tested cultural competency model in the health professions is that by Kim-Goodwin, Clarke and Barton described as the Culturally Competent Community Care (CCCC) model (2001). The CCCC model includes four dimensions: caring, cultural sensitivity, cultural knowledge and cultural skills.

1. Caring**:** While there is no specific definition of "to care," it can include the will to care, intent to care, and caring actions plus attitudes, judgments, and actions that support and allow for caring to occur.

2. Cultural sensitivity: Includes respectful attitudes, perceptions and values that show heightened awareness towards both your own culture and that of another person
3. Cultural knowledge: The cognitive understanding of culture-specific behaviors
4. Cultural skills: Abilities obtained in cultural assessment, advocacy and communication needed to provide care. This includes language skills.

This model is unique because it is currently the only comprehensive model locating cultural competence in community settings. It allows culturally competent staff to resolve issues between cultural, health and community systems and can be used to predict public health outcomes in such culturally competent communities.

The Cultural Competence and Confidence (CCC) Model

More recently, a third model by Marianne R. Jeffreys was recently presented to the field of nursing. This model, known as the Cultural Competence and Confidence (CCC) model, was created to provide an "organizing framework for examining the dimensional factors involved in the process of learning cultural competence in order to identify at-risk individuals, develop diagnostic-prescriptive strategies to facilitate learning, guide innovations in teaching and educational research, and evaluate strategy effectiveness" (Jeffreys, 2006). This differs from other models such as Campinha-Bacote and Leininger by focusing specifically on the learning process as influenced by *Transcultural Self-Efficacy* (TSE), or the "perceived confidence for performing or learning transcultural nursing [(health care provider)] skills" (Jeffreys, 2000). In essence, Jeffreys proposes that TSE is a new and required construct in the process of cultural competence. Like Campinha-Bacote, Jeffreys lays out a number of assumptions with her model based on previous studies of self-efficacy:

1. Cultural competence is an ongoing, multidimensional learning process that integrates transcultural skills in all three dimensions (cognitive, practical, and affective), involves TSE (confidence) as a major influencing factor, and aims to achieve cultural congruent care.
2. TSE is a dynamic construct that changes over time and is influenced by formalized exposure to culture care concepts (transcultural nursing).
3. The learning of transcultural nursing skill competencies is directly influenced by the adequate learning of such skills and by TSE perceptions.
4. The performance of culturally congruent nursing skills is influenced by self-efficacy perceptions and by formalized educational exposure to transcultural nursing care concepts and skills throughout the educational experience.
5. All students and nurses (regardless of age, ethnicity, gender, sexual orientation, lifestyle, religion, socioeconomic status, geographic location, or race) require formalized educational experiences to meet the culture care needs of diverse individuals.
6. The most comprehensive learning involves the integration of cognitive, practical, and affective dimensions.
7. Learning in the cognitive, practical, and affective dimensions is paradoxically distinct yet interrelated.
8. Learners are most confident about their attitudes (affective dimension) and least confident about their transcultural nursing knowledge (cognitive dimension).
9. Novice learners will have lower self-efficacy perceptions than advanced learners.

10. Inefficacious individuals are at risk for decreased motivation, lack of commitment, and/or avoidance of cultural considerations when planning and implementing nursing care.
11. Supremely efficacious (overly confident) individuals are at risk for inadequate preparation in learning the transcultural nursing skills necessary to provide culturally congruent care.
12. Early intervention with at-risk individuals will better prepare nurses to meet cultural competency standards.
13. The greatest change in TSE perceptions will be detected in individuals with low self-efficacy (low confidence) initially, who have then been exposed to formalized transcultural nursing concepts and experiences (Jeffreys, 2006).

Jeffreys notes that her model is very new and can require modification as new data becomes available. In addition, Jeffreys created a complementary self assessment tool, the Transcultural Self-Efficacy (TSE) Tool (TSET) that will be mentioned again in the section on the evaluation of assessment tools.

Betancourt Model of Knowledge, Skills and Attitudes

The most common model used in medical education, according to the curriculum guidelines designed by the American Medical Student Association (AMSA) and Betancourt (2003), breaks down cultural competency learning into three parts:

1. Knowledge: In the knowledge domain, also referred to as the multicultural/ categorical approach, the focus is on increasing the knowledge of the learner regarding cultural topics. The range may include rationale for cultural competence in the medical school curriculum; definitions about culture and related concepts; specific

facts about cultural groups; and topics related to theories of cultural competence. This domain may also include knowledge related to assessing the community of concern including predominant groups within the population; identifying prevailing health beliefs, practices and values; identifying social, economic, and behavioral determinants of health; disease incidence and prevalence; evidence-based information related to health disparities and the impact of the health delivery system.

2. Skills: The skills domain, or cross-cultural approach focuses on advancing the skills and tools of the practitioner and identifying the expectations of the learner. The curriculums in this domain include strategies for eliciting information from patients through communication and interviewing techniques, and then incorporating this information into an appropriate treatment plan that displays sensitivity, with a focus on interactions and communication skills. Students should learn a number of interviewing models used to elicit information from the patient regarding these topics. This domain may also include information related to strategies used for physician-patient negotiation in treatment decisions. Learning skills related to ethnographic approaches, assessment of the population, and transfer of this knowledge into treatment plans are also part of this domain.
3. Attitude: The attitude domain, or cultural sensitivity/ awareness approach, seeks to increase the learner's sensitivity, respect, humility and awareness of the influence of cultural factors on the patient's values, beliefs and attitudes. The strategies for achieving this include self-reflection and self-understanding of one's own culture, which helps to identify the learner's awareness of stereotyping, personal biases and beliefs and how they affect the provider-patient encounter.

Even with defining the concept of cultural competency one encounters a number of problems. Nunez (2000), for example, states that the term "cultural competency" is problematic in the development of cultural competency curricula. Rather than calling it cultural competency, which Nunez implies is a discrete knowledge set that focuses on the cultures of the patient only as something "other," Nunez suggests the term "cross-cultural efficacy" as more appropriate. Nunez states that the caregiver is effective in interactions of individuals of different cultures when the caregiver perceives that all points of view are valid with neither being more accurate than the other, including their own. Tervalon and Murray-Garcia (1998) go even further to suggest the use of the term "cultural humility" where students are taught the process of continuously evaluating and critiquing their own pattern of behaviors. The term "cross-cultural education" is also used by several scholars as an alternate term from cultural competency (Betancourt, 2003; Dolhu, Munoz & Grumbach, 2003). This dissertation will use the term "cultural competency," but it will be used not only to describe the medical students, but the educational institutions that educate them as well. It is important that medical schools show their own "competency" by creating an environment that requires critical thinking and provides the necessary knowledge and skill sets for the students to develop their own cultural competency.

Integrating Culture into the Curriculum

Macro Level Concerns-Theory and Design

In the design of cultural competency medical education curriculum, the Liaison Committee on Medical Education (LCME) provides several overview-level recommendations. The LCME leaves it to the faculty to create a curriculum that permits students to learn the fundamental principles of medicine, to acquire skills of crucial judgment based on evidence and experience, and to develop the ability to use principles and skills wisely in solving problems with the total

medical needs of their patients (2001). In addition, faculty must present student evaluations for graduation that are based on the student's ability to solve problems and use critical reasoning skills. In the use of evaluations, the LCME discourages the use of frequent tests over the creation of a student-initiated learning environment where clinical skills, behaviors and attitudes are directly observed (1997). These recommendations by the LCME help address the natural complexity and diversity of the patient population as it will affect healthcare delivery (p. 25).

Despite the large amount of work that focuses on the theoretical development of curriculum and construction of standards onto which to base the development of cultural competency programs, the actual selection and development of teaching methods remains complex and problematic. There are many different types of instructional methods and materials that are supported by past research that do not use the "memorize and test" paradigm. The range of instructional strategies for culture and diversity teaching include contextualized learning, collaborative and cooperative learning, role-playing, simulations and games, case methods, and activities that promote critical thinking and problem solving (Franklin, 1992). Cooperative learning is typically described as an instructional strategy in which students work together in small groups collaboratively (Slavin, 1987). In those strategies listed above, real-world knowledge, skills and experiences are needed over rote text and lecture memorization.

While the actual implementation of multicultural education varies greatly, James Banks (1997, 1998) defined four different approaches to the integration of multicultural content into the curriculum (extracted from Bloom 2005):

1. The Contributions Approach: Commonly referred to as the heroes and holidays approach. This approach adds some content to the curriculum with a focus on discrete cultural knowledge. This approach gains popularity from the fact that it is the easiest approach to use. It requires no alterations to the existing curriculum. This approach does not come without its limitations. Stated as the most significant limitation is the fact that it does not give students the opportunity to see the critical role of "ethnic culture" in the U.S. Rather,

the individuals and celebrations are seen as an addition or appendage that is unimportant to the core subjects. Further limitations of this approach are that teaching about others does not lend itself to further discussion of oppression, social inequality, and struggles within racism and poverty. One of the other limitations with this approach is the criticism that by only teaching content, this approach can potentially lead to reinforcing and perpetuation of stereotypes by presenting superficial and trivial understandings of ethnic cultures (Banks, 1998; Nieto, 1999; Sleeter, 1996).

2. The Additive Approach-The second level of reform is the additive approach. Much like the content-only approach, this approach allows content, concepts, and themes to be added into the curriculum without restructuring it. This approach has similar limitations as above. According to McCann (2003) the additive approach fails to help students understand how the dominant and ethnic cultures are interconnected and interrelated. In addition, another criticism is that neither of the first two levels attempts to examine and deconstruct structures in our society that maintain inequalities.
3. The Transformation Approach-This approach differs than the two above in that the structure of the curriculum is changed to enable students to view concepts, issues, events, and themes from the perspective of others. Examining the impact on others is a major focus of this approach. In other words, activities or lessons that enable students to see concepts from several perspectives are established.
4. The Social Action Approach-The fourth and final approach to curriculum reform includes all of the elements from the transformative approach but adds components that require students to make decisions and take actions on important social actions to help solve them. This approach requires that students not only explore and understand the dynamics of oppression, but also commit to making changes. The major goal of this approach is to teach students thinking and decision making skills that empower and enable them to acquire a sense of political awareness and efficacy. However, this approach does not come without criticism. One criticism is that this process takes a lot of time and energy (Banks, 1997).

Micro Level Concerns

Despite all of this work on the conceptualization of a cultural competency framework to work from, the application of a successful standardized program for cultural competency has been problematic (Dolhun, Munoz, & Grumbach, 2003). One problem is that despite the abundance of research and work done on the topic, there is little collaboration among schools and specific programs. As noted earlier, other fields such as psychology, social work and nursing considered cultural competency long before medicine. Collaboration between medicine and these other fields currently exists but is still somewhat in its infancy. Wear (2003) states that individual medical educators need to look outside their own field and incorporate what has been done by

others when developing their own cultural competency program. The fragmentation causes the unnecessary duplication of problems and slows down the curriculum development process.

Another problem is the actual application of the term cultural competency. Not only is cultural competence as a term hard to define but is even harder to apply. As noted in a previous section, the definition "cultural competency" itself is problematic. Current programs use the term "culture" and "diversity" in different ways. For example there is controversy about which cultural groups should be included and how these groups should be defined. While race and ethnicity are used by many as the major components of "culture", others feel cultural groups can be defined by religion, sexual orientation, physical abilities, or geographic location. Others define culture in more global terms as any social group that has a shared language, rules, and behaviors (Holliday, 1991). Examples of this would include topics such as deaf culture and rural-based culture. One medical school addressed what is to be "cultural" by teaching that culture is "Anyone who is not you" (Nunez, 2000). Overall, the subjectivity on how culture can be used has created an unsystematic structure of its employment and has left many medical schools confused.

Nunez (2000) notes that the term "cultural competence" implies not only a discrete knowledge set, but also focuses on the culture of the patient. In other words, the concept of the patient as the "other" is emphasized. The patient is deviant from the norm through his or her "lack of" knowledge, their disease state, and their culture (Nunez, 2000). Nunez (2000) further suggests that by the simple act of using this term and teaching in this way, ethnocentricism is reinforced which can cause more harm than good. This frame of thought is important to note in that it emphasizes curriculum development. Many medical schools are simply "adding" one or two courses or lectures rather than integrating it into the curriculum to avoid ethnocentricism

(Nunez 2002). Such classes are adding static "fact" to their teachings. In addition, the current trend in medical schools is to consider the biomedical approach as the norm and therefore not technically "cultural" in itself. Therefore the culture of Biomedicine neutralized and possibly overlooked culture as having a profound effect on perceptions of illness and providing care to patients (Nunez, 2002; Taylor, 2003).

Partly because culture and diversity are so hard to define and operationalize, any efforts on behalf of medical schools to integrate cultural competency into the curriculum have been praised by medical schools and administration. Bloom (2005) suggests that such undiscriminatory praise is problematic in the development of a more effective cultural competency program for several reasons. The first mistake made by many medical schools is that cultural competency can be taught in a course, implying culture is static with a beginning and an end (Bloom, 2005). The second problem is that cultural competency efforts tend to focus towards the accumulation of knowledge. Such thinking is limited. In their 2005 brochure entitled "Cultural Competence Education", the AAMC stresses that:

> A cultural competence curriculum cannot be an add-on to the present medical school curriculum. If such issues such as culture, professionalism, and ethics are presented separately from other content areas, they risk becoming de-emphasized as fringe elements or of marginal importance. (AAMC, p. 2).

Such a view does not focus on changing attitudes and beliefs. The final problem is that there is no consensus about what type of planned experiences will improve the cultural competence of future doctors. This is partly due to lack of inter- and intra- disciplinary collaboration. The overall result is that medical educators do not have an agreed-upon framework that defines key methods or issues that are critical to implement reform initiatives in school. The result is a lack of understanding of what methods of change work and why they work. This lack

of understanding is even more problematic in light of recent licensing board mandates that are beginning to assess cultural competence.

What these observations state is that to have a truly effective cultural competency program in the medical school curriculum, fundamental reform needs to occur. Effective cultural competence cannot be obtained from the addition of a class, lecture, activity, nor can it be limited to one or even a few exposures. Cultural competency must be integrated as part of curriculum with multiple exposures. In addition, cultural competency must also occur at the organizational and governmental level. In order to provider quality care, there must be systematic checks (i.e., policies and procedures) as well as interpersonal ones (i.e. quality and equitable delivery from sensitive providers). In addition to initiating a comprehensive cultural competency curriculum for their students, medical schools must also be involved with policy and procedural reform for the most effective and long lasting results.

Several scholars (Nunez 2000; Taylor 2003a; Wear 2003) note similar problems with the current planning and initiation of cultural competency curriculum. One problem is the essentialization of different groups during instruction. Specifically researchers are concerned with the assumption that teaching about certain characteristics of language and customs of nondominant groups in relation to their health and issues illness will enable students to provide better health care. The problem with essentialization is that groups are lumped together, making it seem that their members posses unilateral traits. Within this orientation people are rarely viewed as complex interplays of identities but rather are viewed as one overarching identity (Taylor, 2003b; Green, 2006; Lee & Farrell, 2006; Nunez, 2000). Such instruction only helps to perpetuate stereotypes and can lead to similar or even worse health care disparities.

Finally, two additional, more technical problems exist that are worth mentioning. The first is related to the idea of "adding on" curriculum. While this is problematic in itself, many faculty members question to where such curriculum and planned experiences would be added to an already set and somewhat full student schedule. In addition, much curriculum development is focused on the student learning from faculty. As the earlier section on physician demographics as well as other literature suggest, students tend to be more culturally sensitive, diverse and aware than their older, faculty counterparts (Fang, et al 2000; Palepu, et al. 1998; Velde, Wittman, Bamberg, 2003). Truly comprehensive cultural competency curriculum would need to focus on the cultural competency of the teaching faculty before one can expand than to the students.

Current Programs

Between 1978 and 2000 there have been four articles with extensive literature reviews on the extent to which cultural competency was being taught in medical school curriculum as summarized by the Table 3 (Louden, Anderson, Paranjit & Greenfield, 1999; Wyatt et al., 1978; Lum & Korenman, 1994; Flores, Rabke-Verani, Pine & Sabharwal, 2000).

Table 3

Cross-Cultural Curricula in Undergraduate Medical Education (Courtesy of IOM)

1978 (Wyatt):
- 20% med schools offered specific "sociocultural courses"
- 40% covered issues within other courses
- 40% offered none

1992 (Lum):
- 13% offered separate "sociocultural course" (only 1 required)
- 60% integrated sociocultural factors into broader curriculum

1998 (Flores)
- 8% offered separate course
- 87% integrated sociocultural factors into curriculum

1999 (Loudon)
- 17 programs teaching 'cultural diversity" identified (US, UK, Canada, Australia)

NOTE: Cultural competence or cross-cultural medicine not used in search terms.

Table 3 shows two things. The first is the difficulty in defining both the existence and extent of cultural diversity curricula in medical school programming. The second is that even with the differences in defining its existence, all four studies show that there is confusion on how to teach the curriculum (separate or integrated) if at all. Since 2000, there has been a tremendous push to integrate cultural competency into medical education. Fueled by the AAMC and LCME, it is estimated that as of 2008 90% of medical schools have incorporated cultural competency into their curriculum (Boutin-Foster, Foster and Konopasek, 2008).

Even with the number cultural competency programs in existence, such programs are diverse along variables such as type of instruction, time allotted, level of compensatory participation, amount of self-evaluation, and course objectives and student evaluation. To specifically address the issue of evaluation the next section will discuss the evaluation of cultural competency assessment tools.

Evaluation of Cultural Competency Assessment Tools

In addition to the implementation of an influential cultural competency program is creating and/ or selecting an appropriate survey tool to evaluate the program's effectiveness on students. A number of evaluation tools have been created in the last 30 years but many have been criticized due to various flaws. This section will discuss the general history and use of survey-based tools in cultural competency medical education evaluation and the current problems and pitfalls. This will provide the basis to discuss several commonly used cultural competency survey tools.

Sounding somewhat contradictory, the largest problem with cultural competency education evaluation is currently the wide range of tools available. This is because, as noted

earlier (in "Integrating Culture into the Curriculum: Micro Level Concerns"), a near plethora of quality cultural competency research has been conducted with little intra- and interdisciplinary collaboration. The current system leads to the needless replication of both programs and assessment tools and a lack of standardization. This problem has very recently been recognized by academic scholars. In June of 2007, two articles were published on the evaluation of current culturally competency survey tools (Kumas-tan, Beagan, Loopie, Macleod & Frank, 2007; Gozu, Beach, Price, Gary, Palacio, Robinson, et al., 2007). Both articles searched and reviewed the most widely used and most easily accessible forms of evaluation.

Gozu, et al. (2007) notes that most self-administered cultural competency tools have not been "comprehensively identified, described, or critiqued" (p. 180). Looking at English-language articles between the years 1980 and June of 2003, Gozu (2007) et al. found that only fourteen (29%) of the forty-five articles provided any reliability data (including either internal consistency or inter/intra rater reliability), seven (15%) had any validity data (face/content validity and/ or construct validity), and a total of six (13%) had both. Reliability and validity are important in an assessment scale to decrease the chance that "improvements [observed] in the knowledge, attitudes, and skills of health professionals using these instruments [are either] underestimated or overestimated" (p. 186). From these six instruments, the authors did further analysis into the survey structure and content. Gozu et al. also noted several general problems with individual questions. The first was that the surveys were highly varied in terms of target population, content asked, and targeted patient group to be tested. The majority of evaluations (two-thirds) targeted nurses and other providers, with 33% targeting physicians. Curriculum content was inconsistent in the material and ranged from specific cultural content, general concepts of culture, language, and the patient-provider interaction, but the questions themselves were "not easy to understand,

asked more than one question (double barreled) in one item, and might be either be misleading to the respondents or not interpretable to evaluators" (Gozu et al., 2007, p 187). For those questions that addressed a student's knowledge, some evaluation instruments asked questions about specific characteristics of certain ethnic/ racial groups. Such measurement is not considered optimal by experts because it can lead to stereotyping and categorization by the learners (Betancourt, 2003). Questions for attitudinal assessment were also problematic, as most instruments attempted to capture explicit attitudes. The two problems with this were that (1) many associated cultural competency programs did not address explicit attitudes and (2) it is hard to measure true cross cultural attitudes as individuals tend to choose the most socially-desirable answer over their own beliefs (social desirability bias) (p. 53). Finally, questions that addressed skills were problematic because self-assessments could likely not be objective. No instruments reviewed by the researchers used independent raters for the skills questions.

Kumas-Tan et al, (2007) also examined quantitative self-administered measures of cultural competence. While also looking at issues of reliability and validity, the authors compared studies by "identifying six prominent assumptions embedded in the measures" (p. 548) similar to those addressed in the previous study. Specifically, the researchers examined previous literature that expressed concern over the following:

Reliability
1. Development without patient input
2. Normed on predominantly White, middle-class, highly educated populations
3. Self-rating leads to social-desirability effects

Validity
4. Oversimplification of culture
5. Oversimplifaction and debate on the definition of cultural competence
6. Debate on the very meanings within the awareness/attitudes-knowledge-skill model

Utility
7. Existing measures may be lengthy and cumbersome
8. May not be completely relevant to trainees

Addressing the validity issues related to the definition of culture and cultural competence, the authors generated six general erroneous assumptions to compare the 10 most widely used cultural competency measures:

1. Culture is a matter of ethnicity and race.
2. Culture is possessed by the Other; the Other is/has the problem.
3. The problem of cultural incompetence lies in practitioners' lack of familiarity with the Other. Practitioners should be aware of, knowledgeable about, and seek contact with the Other.
4. The problem of cultural incompetence lies in practitioners discriminatory attitudes toward the other.
5. Cross-cultural health care is about Caucasian practitioners working with patients from ethnic and racialized minority groups
6. Cultural competence is about being confident in oneself and comfortable with others.

Kumas-Tan, like Gozu, found that there was little uniformity in the methods used to evaluate cultural competency training for health professionals. Results show that all instruments used at least two of these erroneous assumptions within their measurement. This suggests that all instruments studied in this review are limited in their ability to measure cultural competence. Overall, both reviews by Kumas-Tan et al. and Gozu et al. on currently available cultural competency instruments note that despite considerable progress, there is a lot of room for improvement.

Survey Evaluation Measures: General Overview

It can be argued that the field of counseling psychology has taken the lead in multicultural competency research and evaluation measurements in the last twenty years. Their commitment is exemplified in a recent Delphi Poll (a survey of members in the field of counseling psychology) where counseling psychology identified "commitment to issues of diversity" as their single greatest core identification of the profession (Neimeyer & Diamond, 2001, p. 57). Despite the increasing use of multicultural competency measures in research

program evaluation, the current collective set of measures is still considered to be in the early stages of development and evaluation (Ponterotto, Fuertes, & Chen, 2000). Landmark work on multicultural competency assessment was conducted by Hernandez and LaFromboisde with the development of their Cross-Cultural Counseling Inventory (CCCI) (Hernandez & LaFromboise, 1985) and its subsequent revised version (CCCI-R) (LaFromboise, Coleman, & Hernandez, 1991). The measurement tool required direct observation and was designed to be used by an evaluator who observed a counselor working with a client. While such a tool had its usefulness, it lacked ease-of-use since it required that programs had the time and resources dedicated to (1) find and train evaluators and (2) coordinate schedules between evaluators, counselors, and clients for each individual evaluation.

From the CCCI, work on the creation of counselor self-report assessments of cultural competence emerged. These self-reporting tools allowed for greater convenience and anonymity. In the early 1990s, three self-reporting tools were created: the Multicultural Awareness/ Knowledge/ Skills Survey (MAKSS) (D'Andrea, Daniels & Heck, 1991, the Multicultural Counseling Inventory (MCI) (Sodowsky, 1996; Sodowsky, Taffe, Gutkin, & Wise, 1994), and the Multicultural Counseling Awareness Scale (MCAS) (Ponterotto et al., 1996; Ponterotto, Sanchez & Magids, 1991). The conceptual basis for all three of these self- assessment tools was from Sue, Bernier, Duran, Feinberg, Pedersen, Smith, et al. (1982), where cultural competence consisted of three distinct but interrelated components, "awareness of one's own cultural socialization and accompanying biases, knowledge of the worldviews and value patterns of culturally diverse populations, and specific skills for intervention with these populations (Ponterotto, Gretchen, Utsey, Rieger & Austin, 2002, p. 154). This definition is very similar to Betancourt's previously mentioned requirements of cultural competency commonly cited in

medical education. These common theories make such subsequent cultural competency evaluation tools created by the field of counseling psychology moderately applicable to the field of medical education. Chapter 3 will discuss in detail several common counseling psychology evaluation measures which will subsequently be used for the purposes of this dissertation in efforts to measure changes in cultural competency components of awareness, knowledge, attitudes and willingness to engage with multicultural and cultural competency issues.

CHAPTER III: RESEARCH DESIGN AND METHODOLOGY

This chapter will discuss the methodology and design of the research in order to answer the research questions. Specifically, this chapter will describe (1) the survey tools utilized, what they measure and why they were chosen and; (2) the data collection and analysis procedures to answer the research questions related to changes in cultural attitudes and knowledge; and, (3) describe the cultural competency curriculum at the College of Medicine at the University of Illinois Chicago, Urbana (UIUC-COM) campus.

Survey Tools: MCKAS, CoBRAS, and QDI

The following sections will discuss the three counseling psychology evaluation measures used for the study's objectives of evaluating changes in medical student's awareness, attitudes, and knowledge about cultural competency issues. While final analysis and discussion dealt with the use of CoBRAS, the following sections will discuss MCKAS and QDI as they were tools included in the survey packets initially distributed. The first section will describe each of the survey tools and the second section will discuss how these measures are used for this study. The three survey tools include the Multicultural Knowledge and Awareness Scale (MCKAS) from Ponterotto et al. (1991), the Color-Blind Racial Attitudes Scale (CoBRAS) from Neville (2000) and the Quick Discrimination Index (QDI) also from Ponterotto et al. (1995). Each of these measures are self-administered and based on a Likert-type scale (e.g. a scale between "strongly agree" to "strongly disagree" to each statement). Each of the surveys as well as the complete survey packets administered can be found in Appendix A. In addition, the first survey packet (administered in Year I) originally contained a few short answer questions asking subjects to define the terms "culture," "diversity," "cultural competency," "race," "ethnicity," "sexuality," and "ethnocentricism." The original intent of the short answer questions was to provide a way to

qualitatively measure cultural knowledge. As both the research question and survey packet was modified between years, this section of short answer questions was taken out of the second year survey packet. A detailed description of the changes and their reasoning is discussed later under the section entitled "Data Collection Procedures." The rest of this section will discuss each of the survey tools in detail and the reasoning for their intentional use in this study.

Evaluation Measures: MCKAS

For the purposes of this study the Multicultural Counseling Knowledge and Awareness Scale (MCKAS) served to answer the research questions by acting as a measure of multicultural knowledge and awareness for Year I (2007-2008). As noted earlier in a general discussion of cultural competency evaluation, the Multicultural Counseling Awareness Scale (MCAS) was developed in 1991 by Ponterotto et al. Since then, the 45-item scale has been reevaluated and revised to a 32-item scale to be known as the MCKAS. Both the original and modified scale are some of the most widely used multicultural competency self-report measures (Pope-Davis & Dings, 1995; Kumas-Tan, et al., 2007).

The modified scale is intended to measure self-reported cultural competency of knowledge/ skills and awareness in counseling professionals. Specifically, the MCKAS has been noted to measure cultural competency along the lines of race and ethnicity. Incompetence is conceptually measured as the practitioners' lack of familiarity and discriminatory attitudes towards those of other ethnicities and races than themselves (Kumas-Tan, et al 2007).

Since its creation and subsequent modification, the scale has been used in a large number of studies (e.g. Dizon, 1997; Constantine, Juby, & Liang, 2001; Manese, Wu, & Nepomuceno, 2001; Pope-Davis Reynolds, & Dings, 1994, and Ponterotto et al., 1996) in the fields of therapy and counseling. The MCKAS has "moderate to good support…for its psychometric properties."

(Ponterotto, Gretchen, Utsey, Rieger, & Austin, 2002, p. 156). The MCKAS survey instrument has been found to have 10-month test-retest reliability (Manese, Wu, & Nepomuceno, 2001) for all subscales and convergent validity for the knowledge subscale to the CCCI-R (Cross-Cultural Counseling Inventory-Revised, another cultural competency scale) as a measure of general multicultural knowledge. In addition, moderate to strong criterion-related validity has been found specifically for the knowledge/ skills subscale with positive correlations through training variables (Kocarek et al., 2001; Pope-Davis, Dings & Ottavi, 1995; Pop-Davis, Reynolds & Dings, 1994) and through scores in multicultural classes (Ponterotto et al., 1996) and internship training programs (Manese et al., 2001). The actual correlation between the knowledge/skills subscale and the awareness subscale has been low to moderate, with an average of .37 across studies (Ponterotto et al., 1996; Pope-Davis & Dings, 1995), supporting the (oblique) nature of these factors.

Evaluation Measures: CoBRAS

The Color-Blind Racial Attitudes Survey (CoBRAS) served to measure both changes in attitudes during the baseline year as well as comparatively after the curriculum change. The CoBRAS, was created in 2000 by Neville as a means to measure the concept of color-blindness (Neville et al., 2000) (see Appendix) which is tied to the concept of modern racial attitudes.

The concept of color-blind racial attitudes is rooted in the field of law but has been used in both popular and scholarly discourse. In summary, color-blind racial attitude is the belief that race should not and does not matter. Neville summarizes scholars' arguments regarding this theory:

> The first part of this concept [(that race should not matter)] seems admirable; a reasonable person probably would not publicly argue that social and economic resources should be disproportionally available to specific racial groups. However, scholars have argued that the latter half [(that race does not matter)] of this perspective is problematic,

> citing that the continuance of racism makes it impossible to ignore the importance of race in people's experiences; this, race does not matter (Helms, 1992; Jones, 1997; Smith, 1995; West, 1992). In addition, [one issue of] the *Journal of Counseling and Development* (Robinson & Ginter, 1999) archived the continuance of racism and its ill effects [relating to] the personal and professional lives of counselors.

A number of ethnic studies and psychology experts note that the concept of racism has dramatically evolved in the last 40 years since the civil rights movement (see previous section). The form of racism most commonly practiced in the United States has shifted from that of overt racism to something more nuanced, complex, yet equally influential in multicultural relationships. Since the civil rights movement, racism has been noted by scholars to have evolved from overt racism to that of modern racism (McConahay, 1986), and finally to that of color-blind racism.

Schofield's (1986) qualitative studies elaborate on the concept to find color-blind racial attitudes as "a point of view which sees racial and ethnic membership as irrelevant to the ways individuals are treated" (p. 232). With these qualitative findings she identified three interrelated manifestations of a color-blind perspective: (a) viewing race as an invisible characteristic (e.g., refusing to notice racial group membership for fear or appearing prejudiced); (b) viewing race as a taboo topic (e.g. adhering to a perceived norm that talking about or referring to racial designators is impolite); and (c) viewing social life as a nexus of individual relations (e.g., individual circumstances, and not intergroup relations, mostly account for one's social life).

From these qualitative studies and observations, Neville created the CoBRAS scale to measure this change in racial beliefs and attitudes. CoBRAS is a 20-item self-administered, Likert-type scale that measures the color-blind racial belief that race does not matter. The Likert-scale is from 1 (Strongly Disagree) to 6 (Strongly Agree). Total scores are summed with higher scores reflecting higher levels of colorblind racial attitudes. Specifically, CoBRAS can be broken

down into three subscales measuring unawareness of (a) racial privilege, (b) institutional discrimination, and (c) blatant racial issues. The alpha coefficients for each of these three factors are 0.83, 0.81, and 0.76, respectively. The total alpha was found to be particularly strong at 0.91. These factors were also found to highly correlate with the Global Belief in a Just World scale (Lipkus, 1991), the Multidimensional Belief in a Just World Scale (Furnham & Procter, 1988), and the Quick Discrimination Index (QDI) (Ponterotto et al., 1995) described later in this section. Two of the factors were found to be temporally stable over a two week period (0.80) where the third factor (Blatant Racial Issues) was found to have a reliability estimate of 0.34. The total test-retest reliability estimate for the total scale was found to be 0.68. The reliability (coefficient alpha) for the current sample was 0.75 for the total score and 0.77, 0.69, and 0.64 for each of the three factors respectively.

As noted above, Neville found a number of results similar to that of Ponterotto et al. (1995) and his QDI instrument. Similar to his results, she found that racial attitudes as measured by the CoBRAS scores, were significantly associated with greater gender intolerance. The results together suggest "that color-blind racial attitudes are related to a conceptual framework in which people interpret social stimuli" (Neville et. al, 2000, p. 68). In particular, Neville's study found that the denial of the existence of racism and racial privilege was related to both racial *and* gender prejudice. It should also be noted that the CoBRAS does not seem to be strongly associated with social desirability, or the idea that one would respond to the questions on CoBRAS strictly following that of social pressures and not one's own viewpoint.

Neville's initial validity studies on the CoBRAS instrument found that some studies (2 of the 5) showed consistent gender and racial group differences. This suggests, as the literature supports, that women on average may be more sensitive to social injustices than their male

counterparts (e.g., Ponterotto et al., 1995; Sidanius, Pratto, & Brief, 1995). Neville suggests that women may be more sensitized to institutional discrimination on the basis of gender, and thus, may be more aware of the existence of other types of discrimination, such as racism. Similar to this, Neville also notes that on average, Blacks and Latinos, corresponded less with color-blind racial attitudes than Whites on most CoBRAS subscales.

Neville, Spanierman, and Doan's 2006 research further explores the association between color-blind racial ideology and multicultural competencies. Studies from social psychologists note that when racial issues are ignored by the counselors, even when they are introduced by the client, the flow of communication and counseling process was disrupted (Thompson & Jenal 1994). In a similar study by Want, Parham, Baker, and Sherman (2004), the authors found that "African American students rated low racially conscious counselors (i.e., counselors who believed one should see beyond race to the human element of the issue) less favorably than high racially conscious counselors, regardless of the counselors' race" (p. 277). Such results show the importance of acknowledging race as a factor in counseling. Overall, those counselors who have a high-level of color-blind racial ideology by not acknowledging race and racism may not have strong relationships with ethnic minority clients such as African Americans. Finally, a study from Burkard and Knox (2004) revealed that "greater color-blind racial ideology was related to lower levels of empathy for a client, regardless of the client's race or reported attributions about the source of the problem" (extracted from Neville, Spanierman & Doan, 2006, p. 277). Such results from the counseling psychology field can be (and with further research) analogously applied to the medical professional and the physician-patient relationship.

In their study Neville, Spanierman and Doan (2006) used the Multicultural Counseling Knowledge and Awareness Scale (MCKAS) (Ponterotto, Gretchen, Utsey, Rieger & Austin,

2002) to find a direct correlation between color-blind ideology and multicultural competency in the context of counseling psychology. Results showed that greater levels of color-blind racial ideology as measured by CoBRAS were related to lower self-reported multicultural counseling awareness and knowledge as measured by the MCKAS and was a better predictor than self-reported levels of multicultural training, social desirability, and participant race. This study suggests the usefulness of conducting the scales simultaneously for a more complete understanding of the level of cultural competency in the subject. While the MCKAS addresses the issues of multicultural knowledge and attitudes as addressed by the questions in chapter one, the CoBRAS addresses multicultural attitudes and awareness in detail.

Evaluation Measures: QDI

The Quick Discrimination Index (QDI) was used in this study to measure attitudes towards racial diversity/ multiculturalism and women's equality for the second year cohort. The QDI, (Appendix) by Ponterotto et al. was created in 1995 as a means to measure attitudes towards racial diversity/ multiculturalism and women's equality in late adolescents and adults. It is a 30 item self-administered scale based on the Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = no sure, 4 = agree and 5 = strongly agree). Its length and administration make it a time-convenient tool estimated to take eight to fifteen minutes to complete. It is labeled as "Social Attitudes Survey" to control for some forms of response bias. Unlike Ponterotto's other multicultural attitudes scale, the MCKAS described earlier, the QDI is appropriate for the general public, whereas the MCKAS was designed to be administered to individuals in the counseling health professions. With this difference, both scales, the MCKAS and QDI have their usefulness in their use with first year medical students. While first year medical students are in the process of becoming physicians and workers in the health care field, a characteristic that

makes the MCKAS useful, they are very early on that path (four years of medical school plus three to nine years of residency), making the QDI more appropriate.

The QDI can be totaled both as a single large scale or divided into three subscales that specifically measure: "(a) general (cognitive) attitudes about racial diversity and multiculturalism, (b) affective attitudes regarding racial diversity related to one's personal life, and (c) general attitudes regarding women's equity issues" (Ponterotto, Bukard, Reiger, Grieger, D'Onofrio, Dubuisson et al, 1995, p. 1016). Both the QDI total score and the three subscale scores were found to be internally consistent, have a 15-week stable test-retest period, and "to have promising indices of face, content, construct, and criterion-related validity" (Ponterotto et al, 1995, p. 1016). The coefficient alpha for the total scale was found to be 0.89 (Ponterotto & Burkard, 1993). The reliability (coefficient alpha) for the current sample was 0.77 for the total scale and 0.75 for the race-related items.

Evaluation Measures: BIDR

The Balanced Inventory of Desired Responding (BIDR) was included in the Year II (2008-2009) survey packet for the purposes of measuring student's responses based on social desirability, but was not used for final analysis. One of the main concerns in the use self-reported assessment scales is that of social desirability, or in lay terms, answering questions not in the way that truly represents the subject's option/knowledge, but answering them the ways that they *think* the researcher, society, or themselves desires. In addition, researchers have attempted to assess the level of social desirability in scales and, if necessary, control for such distortions in individual's responses in self-assessment scales. Since then, there have been a number of measures to assess social desirability including that of the Edwards Social Desirability Scale (Edwards, 1957), the Marlow-Crowne Social Desirability Scale (Crowne & Marlow, 1960)

and the Eyesnck Lie Scale (Eyesnck & Eysenck, 1964). These have been noted to be one-dimensional and have generally low correlations between different measurements of social desirability. Since then, Paulhus (1984) designed a scale known as the BIDR to measure two factors related to social desirability: self-deceptive enhancement (SDE) and impression management (IM). According to Paulhus (1996), SDE refers to the unconscious positive bias in responding to self-assessment items with the goal of protecting one's positive self-esteem. IM in contrast refers to the conscious answering of item responses with the goal of making a favorable impression on others.

The BIDR is a favorable self-assessment social desirability score for a number of reasons. As mentioned above, the BIDR distinguishes between two parts of social desirability, self-deceptive enhancement and impression management. It consists of 40 Likert-type items on a 7-points scale that are in equal numbers of affirmation and denial items where 20 of each measure the two subtypes of SDE and IM. Over the years, studies have shown the BIDR to have satisfactory internal consistency and test-retest reliability (Paulhus, 1991, 1994). The scores also have distinct internal validity and have a correlation with that of other social desirability scales such as the Edwards Social Desirability Scale.

Description of Cultural Competency Exposure at UIUC-COM: 2007-2009

In order to answer the research questions regarding changes in attitudes of first year medical students relative to changes in the medical school curriculum, data collection occurred over a two year period: 2007-2008 (from this point on referred to as "Year I") and 2008-2009 (from this point on referred to as "Year II"). Each year of data collection focuses on the first year medical school class of the University of Illinois Chicago, Urbana campus (also known as the University of Illinois Urbana Champaign, College of Medicine, UIUC-COM).

The structure of the first year medical curriculum (from now on referred to as the "M1") is primarily lecture-based, with laboratory used to supplement the lectures and small group discussions a minor component. The courses that included issues related to cultural competency are Behavioral Science (a spring semester, lecture-based course), and Introduction to Human Disease (IHD, a year-long, small-group-driven course). Behavioral Science is a traditional lecture-based course that teaches a variety of medically-related topics such as psychology (child development, learning, human sexuality, psychopathology, sleep), healthcare economics, the healthcare system, and cultural competency. Lectures were given by those in the fields of psychology, education, law, and medicine, with degrees ranging from PhDs, EdDs, and MDs. IHD is a course that is driven by small-group discussion. In this course, students were divided into groups of about 8-15 students with 2-4 physicians per group to help facilitate discussion. The group met five times during the school year, three-and-a-half hours each session. During each of the five sessions, 2-4 students act as "experts" to guide the rest of the group through a fictitious case that all M1 students have access to view via CD. Students were expected to discuss various parts of the patient's medical condition by integrating what they learn from other M1 courses such as biochemistry, anatomy, microbiology, immunology, genetics and physiology.

The two years that were examined differed in terms of number of contact hours and type of exposure to issues related to cultural competency (Table 4). Year I served as a "baseline" with a "minimal" number of contact hours in the first year medical curriculum and Year II had more contact hours and different modes of learning. Specifically, Year I exposed students to two required contact hours (two one-hour lectures) of cultural competency during the spring semester of Behavioral Science class:

- Behavioral Science lectures: “Cultural competency I” and “Cultural competency II.” (2 hours total)

In Year II, first year medical students were exposed to:

- Behavioral science lectures as mentioned above (2 hours total)
- Behavioral science lecture: “Health care economics” (1 hour). This course has been taught in past years (including “Year I”), and was changed in the 2008-2009/ “Year II” year in that there was an integrated emphasis on health care disparities.
- IHD: three of its five student-run sessions placed an additional emphasis on cultural issues, integrating it in the cases of the patient (estimated total of 1 hour of discussion between the three sessions).
- In addition, there are voluntary, out-of-class opportunities for first year medical students including a Complementary, Alternative, and Integrative Medicine (CAIM) seminar series and Medical Spanish Seminar Series.
    - The CAIM seminar series consisted of the following:
        1. One lecture presentation during orientation week:
            a. Introduction to Complementary, Alternative and Integrative Medicine, **one contact hour relevant to cultural competency**
        2. Lunch-hour seminars. Topics for the 2008-2009 school year were:
            a. Guided Imagery and Relaxation as Medicine, one contact hour, topic not directly tied into cultural competency
            b. Listening and Healing: Returning to the Basics of the Caring Profession, one contact hour, not directly tied to cultural competency

3. Three night/ weekend active participation events. Topics for the 2008-2009 school year were:
    a. Introduction to Meditation - Qi Gong Workshop: **two contact hours, topic tied into cultural competency**
    b. Mind Body Experiential Workshop Series: includes discussion and participation in medication, autogenics, biofeedback, mindful eating, and art therapy: 4 contact hours, topic not directly tied into cultural competency
    c. Yoga workshop: two contact hours not tied into cultural competency
4. Clinical Observorships: option to observe one of four local CAIM practitioner, **2-4 contact hours, may or may not be directly tied into cultural competency** (http://www.med.uiuc.edu/depts_programs/ClinicalAffairs/CAIM/, Accessed April 6, 2009; Bollero, personal communication, April 10-20, 2009).

- The Medical Spanish Series consists of four one hour sessions (with the last session being two hours) during the spring semester. Five to seven voluntary proficient medical and undergraduate students teach a total of 25 students. Sessions are held approximately once a month in the evenings. The topics of each of the sessions (in order) are: introductions, body parts, history taking and signs and symptoms (Gonzalez, personal communication, March 27-April 3, 2009).

Table 4

Differences in cultural competency curriculum, Years I and II

	Year I (2007-2008)	**Year II** (2008-2009)
Behavioral Science (Lecture-based learning)	Two lectures -Direct discussion -2 total contact hours	Three lectures -Direct and integrated discussion -2+ total contact hours
Introduction to Human Disease (IHD) (Small-group based learning)	No sessions covering topic	Three sessions covering topic -Direct and integrated discussion -1 contact hour
Alternative medicine (Seminar-based learning)	**Not offered**	**Offered as voluntary** activity -Up to 7 contact hour, directly relevant to cultural competency) -seminar and participatory learning
Medical Spanish (Seminar-based learning, interactive)	Not offered	Offered as a voluntary activity -Up to 5 contact hours -participatory learning

Overall, Year II provided: (1) more contact hours devoted to cultural competency and related issues, (2) two different (required) classes in which issues of cultural competency were taught and (3) three different modes in which cultural competency was taught to the students (focused lecture, integrated lecture and small group sessions). In addition to these required lectures, year two also provided an optional "alternative medicine" lunchtime series for first year medical students. This series consisted of five one-hour sessions throughout the year that students were invited to learn about alternative medicine.

Data Collection Procedures

The original intent of this research was to use 2007-2008 as a "Pilot Year" to test out original survey instruments (Modifed MCKAS, CoBRAS, short answer questions, and a demographic survey tool; see Table 5) with comprehensive research the following year (2008-2009). After initiation of the pilot study, plans were made to collaborate with another medical school during the 2008-2009 school year. In order to collaborate, the researcher changed her survey packet to match that being used at the collaborating medical school (QDI, CoBRAS, BIDR and a demographic survey tool; see Table 5). In addition, at this time the researcher wrote her methodology to reflect this collaboration which was subsequently approved by her dissertation committee. Immediately prior to distribution of the surveys, the researcher was not granted formal access to administer research at the collaborating school. Due to these access and time constraints, the researcher kept the original methodology regarding the administration of the survey packets (QDI, CoBRAS, BIDR and a demographic survey tool) and changed her original research question (to measure "attitudes" singularly and not "knowledge and attitudes") as well as her data analysis (compare only CoBRAS mean scores between Year I and II as a measure of attitudes at one medical school and not QDI, CoBRAS, and BIDR mean scores during one year at two medical schools). While not all surveys were used in final analysis, they will be described in this section as they were included in the original survey distributions.

Survey data was collected over the academic school years of 2007-2008 and 2008-2009 (Year I and Year II, each extending through August-May). The survey packet administered during Year I included the modified MCKAS and CoBRAS survey tools as well as a demographic survey tool. The survey packet was distributed twice: once during orientation week for M1s (Year I, pre-intervention), prior to exposure to the M1 curriculum (including the cultural

competency curriculum), and again approximately one week after final cultural competency exposure (Year I, post-intervention). During the first year students had the potential to be exposed to two lectures on cultural competency as well as a discussion about cultural competency and professionalism during orientation (all three events are mandatory, although attendance is not taken). Students were given an hour to take the survey with the expected time to be 15-20 minutes. During the second administration of the surveys, students were able to enter a drawing to win a gift card (one of two, $25 each), to a local coffee shop as an added incentive.

During Year II, UIUC-COM (2008-2009) students were administered a survey packet that consists of QDI, CoBRAS and BIDR survey tools (QDI and BIDR were survey tools that had been removed from analysis shortly after the administration of surveys in August 2008, but were kept in the May 2009 survey packet for consistency) as well as a demographic tool. The survey packet was distributed twice: once during orientation week for M1s (August 2008, pre-intervention), prior to exposure to the M1 curriculum (including the cultural competency curriculum), and again approximately one week after final cultural competency exposure (May 2009, post-intervention). During this year students had the potential to be exposed to a number of culturally-related opportunities including two cultural competency lectures from Behavioral Science, participation in Medical Spanish, and attendance to a number of CIAM lectures and events (for a full list refer to Table 4). During both years the researcher personally attended each of these sessions and administered the survey packets to the students. Students were given an hour to take the survey with the expected time to be 15-20 minutes. During the second administration of the surveys, students were able to enter a drawing to win a gift card (one of five, $10 each), to a local coffee shop as an added incentive. During each year there were approximately 125 students in the class.

Table 5

Surveys administered, Years I and II

Year I Packet	Year II Packet
• CoBRAS • MCKAS • Short Answer Questions • Demographic Tool	• CoBRAS • QDI • BIDR • Demographic Tool

Institutional Review Board (IRB) Approval was obtained for the UIUC campus during the summer of 2007 (for the 2007-2008 school year) and 2008 (for the 2008-2009 school year), with amendments submitted as needed. Proper procedures as outlined by the IRB for obtaining participants were followed at UIUC-COM. Permission was granted from the respective deans and instructors prior to implementation of survey administration. The survey was explained to students as assessing "professionalism and cultural competency." Surveys are anonymous as no names are associated with the data. As per IRB regulations and guidelines to use these pre-validated survey tools, all completed surveys will be kept in a locked filing cabinet in a locked office for a period of at least five years after their administration.

Description of Analysis

After data collection, surveys were entered into SPSS version 16 for statistical analysis. As CoBRAS was the only survey tool used consistently during Year I and Year II, it was the only survey used in final analysis (along with demographic variables).The following chapter will provide detailed descriptive and analytical results. Results will examine demographic variables such as gender, race, age, estimated parental income level, self-indicated social class, and generational status. As the Likert scale scores are summed to create subscores, testing means (with the use independent T-tests) is preferred over the testing of medians (as in nonparametric tests such as Mann-Whitney). Independent T-test analysis will be utilized comparing the above variables to subscores obtained in the CoBRAS tools for each of the dates the surveys are

administered to determine the relationship of cultural competency to the variables across time points. CoBRAS scores from both years will be compared to various demographic variables collected with the surveys variables (gender, age, race, immigration status, special program participation, major, income, and self-described social status) This analysis will address both questions first presented in the introduction (Chapter 1): (1) changes in incoming medical students' cultural attitudes towards cultural competency issues before and after a baseline cultural competency intervention during their first year of medical school and (2) changes in attitudes in cultural competency after additional intervention and exposure to the topic in year II.

After data were analyzed, conclusions were made in relation to the research questions as to whether change occurred from pre-intervention to post-intervention in cultural competency of first year medical students. After such conclusions are drawn, policy changes for the institution and medical schools in general will be recommended. Examples of possible suggestions in policy changes may included changes in admissions criteria for admittance into medical school, staff and faculty hiring and development, and curriculum changes regarding cultural competency during the first year of medical education. Such policy suggestions will provides specific suggestions regarding the time, length and content of program implementation.

CHAPTER IV: SURVEY IMPLEMENTATION AND DATA ANALYSIS

The following chapter will discuss the process and outcome of data collection as previously described in the methodology, followed by analysis of changes in color-blind racial attitudes. This chapter will be divided into five sections. The first section will discuss the outcome of survey collection, including groups included in final analysis and response rates. The second section will discuss demographic characteristics of the two sample populations to illustrate similarity and differences between the two groups. The last three sections will answer the research questions posed in the introduction through the analysis of the CoBRAS results. Of these three sections, the first will compare differences in color-blind racial attitudes as measured by the Color-Blind Racial Attitudes Scale (CoBRAS) and subscores within the 2007-2008 entering medical student cohort (referred to from this point on as Year I, with pre and post-intervention dates August 2007 and May 2008) and the 2008-2009 (referred to from this point on as Year II with pre and post-intervention dates August 2008 and May 2009) entering medical student cohort (Question 1). Additional analyses (the second section of CoBRAS analysis) will look at changes in: (i) initial color-blind racial attitudes and (ii) color-blind racial attitudes for Years I and Year II when analyzed by various demographic variables (i.e. gender, race/ ethnicity, age, immigration status, major, income, and self-described social status; Question 1). The final section of CoBRAS results will compare changes in color-blind racial attitudes as measured by the Color-Blind Racial Attitudes Scale (CoBRAS) and subscores between Year I and Year II (Question 2). This analysis will note any changes in attitudes between the current curriculum and the enhanced elective curriculum. Overall, these comparisons will be made to see if significant changes in color-blind racial attitudes—a partial measure of cultural competency—occurred following changes made to the medical school curriculum regarding cultural competency during

and between years I and II. Analysis of these comparisons will help determine if the current efforts by this medical school to address gaps in cultural competency are aiding in the medical school, medical education, and medical profession's goal of increasing cultural competency of future physicians (to be discussed in Chapter V).

Process and Outcome of Data Collection

Data collection took place on four predetermined dates: August 2007 (Year I Pre-intervention), May 2008 (Year I Post-intervention), August 2008 (Year II Post-intervention) and May 2009 (Year II Post-intervention) which provided a final comparison between two academic years. Both "traditional" (non-dual degree, MD-seeking only) and the non-traditional "Medical Scholars Program/ MSP" (dual-degree students, i.e. "MD/ PhD", "MD/ JD", "MD/ MBA") had the opportunity to participate in completion of the survey. However, non-traditional MSP students were excluded during final analysis of the data. Rationale for this exclusion was to keep the focus of the study on examining differences in attitudes during the first year medical school curriculum. MSP students represent 30 different academic disciplines ranging from Biochemistry and Neuroscience to Community Health and Social Work. MSP students are exposed to number of classes and experiences outside of the traditional first year curriculum that are specifically related to either their graduate school training or the nature of the MSP program (described below). MSP students may have different levels of cultural competency due to coursework specific to their fields of graduate study. For example, a Community Health graduate may take a health disparities class as part of his or her graduate curriculum, a class that is not accessible to the typical first-year medical student. In addition, MSP students attend a required annual conference where students share their research endeavors across disciplines, exposing all MSP students to ideas not actively discussed during medical school. MSP students also have the

option to take the first year medical school curriculum over a period of two or more years, an experience very different from the traditional first year medical students. Excluding the MSP group provides consistency in the population in terms of exposure to experiences (i.e. the M1 curriculum) and ensures a more homogenous comparison of analytical variables across time. Table 6 demonstrates final response rates for each of the four data collection dates for traditional MD-seeking students only. All further analysis (including tables) will only include traditional MD-seeking students.

Table 6

Survey Response Rate

Administration Date	Number of surveys completed	Total number of first year medical students	Response rate
Year I, Pre-Intervention	102	121	84.3%
Post-Intervention, 2008	48	121	39.7%
Pre-Intervention, 2008	107	134	79.9%
Year II, Post-Intervention	34	134	25.3%

Survey Sample Demographics

Tables 7 and 8 summarize the survey sample demographics and compare the two first-year medical school classes using the data from the Year I and Year II Pre-intervention subsets (with their high response rates), thus providing a portrait of a "typical" entering medical student at this school. Examination of the demographic characteristics of the two years provides a

comparison both between the two years as well as with the national data of entering medical students. These data will help address concerns about validity and generalizability of data (to be discussed in Chapter V) but is not the main focus of this research.

With the exception of gender, Table 8 shows general demographic similarities between the two classes. The most "typical" entering medical student at this medical school in Year I was white, male, under the age of 25, from a household whose parental income is greater than $100,000/ year, upper middle class (parents who are doctors, lawyers, and similar occupations), third generation, received an undergraduate degree in the Biological Sciences, and had no previous graduate degree before starting medical school. The most "typical" entering medical student at this medical school in Year II was white, female, under the age of 25, from a household whose parental income is greater than $100,000/ year, upper middle class (parents who are doctors, lawyers, engineers and similar occupations), third generation, received an undergraduate degree in the Biological Sciences, and had no previous graduate degree before starting medical school. Although these variables describe the "typical" first-year medical student at this institution, these classes represent diversity in terms of race/ ethnicity, income, self-proclaimed social status, immigration status, particularly for the Year II cohort and major as Table 7 shows.

Table 7

Summary of Demographic Variables for Each Survey Period

Variable	Year I Pre-Intervention	Year I Post-Intervention	Year II Pre-Intervention	Year II Post-Intervention
Gender				
Male	57.8% (59)	50% (24)	45.8% (49)	41.2% (14)
Female	41.2% (42)	50% (24)	54.2% (58)	58.8% (20)
Age Modified 2				
$\leq$ 25	89.2% (91)	87.5% (42)	90.7%	82.4% (28)
$\geq$ 26	10.8% (11)	12.6 (6)	9.4% (9)	17.6% (6)
Not Answered	0% (0)	0% (0)	0% (0)	0% (0)
Race/ Ethnicity				
Caucasian	44.1% (45)	33.3% (16)	46.7% (50)	44.1% (15)
African American	2.9% (3)	8.3% (4)	8.4% (9)	0% (0)
Asian American	37.3 % (38)	31.2% (15)	27.1% (29)	23.5% (8)
Hispanic	8.8% (9)	18.8% (9)	11.2% (12)	23.5% (8)
Middle Eastern	1.0% (1)	2.1% (1)	3.7% (4)	8.8% (3)
Other	2.9% (3)	0% (0)	0% (0)	0% (0)
2 or more Races/ Ethnicities	2.9% (3)	3 (6.2%)	0.9% (1)	0% (0)
Not Answered	0% (0)	0% (0)	1.9% (2)	0% (0)

Table 7

Summary of Demographic Variables for Each Survey Period, Continued

Variable	Year I Pre-Intervention	Year I Post-Intervention	Year II Pre-Intervention	Year II Post-Intervention
Immigration Status				
1st Generation	2.7% (13)	16.7% (8)	19.6% (21)	14.7% (5)
2nd Generation	32.4% 33)	35.4% (17)	33.6% (36)	47.1% (16)
3rd Generation	52.9% (54)	16.7%(8)	44.9% (48)	38.2% (13)
Not answered	2% (2)	0% (0)	1.9% (2)	0% (0)
Special Program Participants				
Rural Health Program	16.7% (17)	8.3% (4)	15.9% (17)	8.8% (3)
Urban Health Program	7.8% (8)	10.4% (5)	14.0% (15)	20.6% (7)
Neither	74.5% (77)	81.2% (39)	70.1% (75)	70.6% (24)
Graduate Degree				
Yes	10.8% (11)	8.3% (4)	25.2%(27)	41.2% (14)
No	88.2 (90)	89.6% (43)	73.8% (79)	58.8% (20)
Not answered	0%(0)	2.1% (2)	0.9% (1)	0% (0)

Table 7

Summary of Demographic Variables for Each Survey Period, Continued

Variable	Year I Pre-Intervention	Year I Post-Intervention	Year II Pre-Intervention	Year II Post-Intervention
Income				
≤$50,000	14.7% (15)	14.6% (7)	22.4%(24)	32.4% (11)
$50,001-$100,000	40.2% (41)	45.8% (22)	31.8% (34)	26.5% (9)
≥ $100,001	42.2%(43)	31.2% (15)	42.1% (45)	41.2% (14)
Not Answered	2.9% (3)	8.3% (4)	3.7% (4)	0% (0)
Social Status				
Lower Class	0% (0)	0%(0)	2.8% (3)	0% (0)
Working Class	15.7% (16)	22.9% (11)	21.5% (23)	29.4% (10)
Middle Class	41.2%(42)	39.6% (19)	32.7% (35)	35.3% (12)
Upper Middle Class**	41.2% (42)	35.4% (17)	39.3% (42)	35.3% (12)
Elite	0 (0%)	2.1% (1)	2% (2)	0% (0)
Not Answered	2% (2)	0%(0)	2% (2)	05 (0)

Table 7

Summary of Demographic Variables for Each Survey Period, Continued

Variable	Year I Pre-Intervention	Year I Post-Intervention	Year II Pre-Intervention	Year II Post-Intervention
Major*				
Biological Sciences	57.8% (59)	54.2% (26)	58.9% (63)	52.9% (18)
Foreign Language	1% (1)	2.1% (1)	0% (0)	0% (0)
Humanities	4.9% (5)	2.1% (1)	2.8% (3)	0% (0)
Mathematics	1% (1)	6.2% (3)	0% (0)	0% (0)
Physical Sciences	3.9% (4)	4.2% (2)	5.6% (6)	2.9% (1)
Social Sciences	3.9% (4)	4.2% (2)	2.8% (3)	14.7% (5)
Biomedical Engineering	3.9% (4)	6.2% (3)	0.9% (1)	0% (0)
Engineering, Non-Biomedical	0% (0)	0%(0)	4.7% (5)	2.9% (1)
2 or more Majors	16.7% (17)	16.7% (8)	20.6% (22)	8% (23.5%)
Other	6.9% (7)	4.2% (2)	1.9% (2)	0% (0)
Not Answered	0% (0)	0% (0)	0% (0)	0% (0)

* "Majors" category: 1. The Year I survey did not have a "Biomedical Engineering" and "Engineering, non-Biomedical" as an option. Students who wrote in these majors under "other" in Year I we re-categorized to either "Biomedical Engineering" and "Engineering, non-Biomedical" respectively. 2. Students who wrote in "Neuroscience" as a write-in major under "other" were re-categorized in "Biological Science."

**The Year II survey modified the term from "Upper Class" (as written in the Year I survey) to "Upper Middle Class" to reflect student self-perceptions, but definitions of both terms were kept the same on both surveys.

Table 8

Predominant Characteristics of the Entering First Year Medical Classes

Characteristic	Year I Entering Class	Year II Entering Class	U.S Entering Medical Student Demographics, 2006
Race/ Ethnicity	White 44.1% (45)	White: 46.7% (50)	White: 72.5%
Gender	Male: 57.8% (59)	Female: 54.2% (58)	Female: 50.3%
Age	Under Age 25: 89.2% (89)	Under Age 25: 90.7% (95)	Under Age 25: 85%
Parental Income	Less than $100,000: 54.7% (56)	Less Than $100,000: 54.2% (58)	Greater than $150,000: 50%
Self-Proclaimed Social Status	"Upper Middle Class" or greater: 41.2% (42)	"Upper Middle Class" or greater: 39.3% (44)	N/A
Immigration Status	3rd or greater generation: 52.9% (54)	3rd or greater generation: 44.9% (48)	N/A
Major	Biological Sciences: 57.8% (59)	Biological Sciences: 58.9% (63)	N/A
Graduate Degree Prior to Medical School	No Previous Graduate Degree: 88.2% (90)	No Previous Graduate Degree: 73.8% (79)	N/A

Analysis of CoBRAS Scores as a Measure of Color-Blind Racial Attitudes

Associated Research Question 1:

1. Is there a significant change in incoming medical students' cultural attitudes towards cultural competency issues (in this case color-blind racism) following a cultural competency intervention during their first year of medical school?

Research Hypothesis 1:

H_0: There is no significant difference in medical students' cultural attitudes towards cultural competency issues (color-blind racism) following a cultural competency intervention during their first year of medical school.

H_a: There is a significant difference in medical students' cultural attitudes towards cultural competency issues (color-blind racism) following a cultural competency intervention during their first year of medical school.

This section will analyze CoBRAS results for year I and II to determine if there was a significant change in medical student's cultural attitudes between pre- and post-intervention survey dates (i.e. Year I Pre-Intervention vs. Year I Post-Intervention and Year II Pre-Intervention versus Year II Post-Intervention). Tables 9-12 below show the frequencies, means, standard error, standard deviation, and variance for all four CoBRAS scales/subscales while tables 13 and 14 show the results of independent t-test analysis between the survey periods by years I and II. Results of the analysis of Year I CoBRASS (Tables 9 and 13) show a non-significant decrease in general color-blind racial attitudes scores (Year I Pre-intervention mean score =63.46, Year I Post-intervention mean score =60.68, p =0.279). Results of the analysis of Year I CoBRAS unawareness of racial privilege score (CoBRASRP; Tables 10 and 13) shows a non-significant decrease in unawareness (Year I Pre-intervention mean score =25.49, Year I

Post-intervention mean score =24.65, p =0.473). Results of the analysis of Year I CoBRAS unawareness in institutional discrimination score (CoBRASID; Tables 11 and 13) shows a non-significant decrease in unawareness (Year I Pre-intervention mean score =23.28, Year I Post-intervention mean score =22.91, p =0.756). Results of the analysis of Year I CoBRAS unawareness in blatant racial issues score (CoBRASBRI; Tables 14 and 15) shows a non-significant decrease in unawareness (Year I Pre-intervention mean score =14.24, Year I Post-Intervention mean score =14.60, p =0.235). Overall, there was no significant change in color-blind racial attitudes scores, unawareness of racial privilege, unawareness of institutional discrimination, or unawareness of blatant racial issues during Year I.

Results of the analysis of Year II Color-blind racial attitudes (CoBRASS; Table 9 and 14) show a non-significant decrease in general color-blind racial attitudes scores (Year II Pre-intervention mean score =61.11, Year II Post-intervention mean score =56.91, p =0.128). Results of the analysis of Year II CoBRASRP (Tables 10 and 14) show a non-significant decrease in unawareness in racial privilege scores (Year II Pre-intervention mean score =24.19, Year II Post-intervention mean score =21.85, p =0.052). Results of the analysis of the Year II CoBRASID (Tables 10 and 14) shows a non-significant decrease in unawareness of institutional discrimination scores (Year II Pre-intervention mean score =23.09, Year II Post-intervention mean score =21.35, p =0.157). Results of the analysis of Year II CoBRASBRI (Tables 14 and 16) shows a non-significant decrease in unawareness of blatant racial issues (Year II Pre-Intervention mean score =13.80, Year II Post-Intervention mean score = 13.71, p =0.912). Overall, there was no significant change in color-blind racial attitudes, unawareness of racial privilege, unawareness of institutional discrimination, or unawareness of blatant racial issues during Year II.

Table 9

Colorblind Racial Attitudes Subscore (CoBRASS) Frequencies

	Year I Pre-Intervention	Year I Post-intervention	Year II Pre-Intervention	Year II Post-intervention
Number of Valid Scores	99	47	106	34
Mean	63.46	60.68	61.11	56.91
SE of Mean	1.334	2.443	1.318	2.561
St. Deviation	13.278	16.746	13.568	14.931
Variance	176.292	280.439	184.082	222.931

Table 10

CoBRAS Unawareness of Racial Privilege Subscore (CoBRASRP) Frequencies

	Year I Pre-Intervention	Year I Post-intervention	Year II Pre-Intervention	Year II Post-intervention
Number of Valid Scores	101	46	107	34
Mean	25.49	24.65	24.19	21.85
SE of Mean	0.635	0.997	0.592	0.993
St. Deviation	6.382	6.760	6.125	5.790
Variance	40.732	45.699	37.512	33.523

Table 11

CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) Frequencies

	Year I Pre-Intervention	Year I Post-intervention	Year II Pre-Intervention	Year II Post-intervention
Number of Valid Scores	101	46	107	34
Mean	14.60	14.24	13.80	13.71
SE of Mean	0.411	0.703	0.417	0.860
St. Deviation	4.135	4.771	4.312	5.012
Variance	17.102	22.764	18.593	23.123

Table 12

CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) Frequencies

	Year I Pre-Intervention	Year I Post-intervention	Year II Pre-Intervention	Year II Post-intervention
Number of Valid Scores	101	46	106	34
Mean	23.28	22.91	23.09	21.35
SE of Mean	0.642	0.976	0.597	1.098
St. Deviation	6.456	6.623	6.145	6.405
Variance	41.682	43.859	37.762	41.023

Table 13

Year I CoBRAS Subscores along Pre and Post-Intervention Dates

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
CoBRASS	1.700	0.194	1.086	144	0.279	2.784	2.564
CoBRASRP	0.030	0.862	0.720	145	0.473	0.833	1.157
CoBRASID	0.097	0.756	0.315	145	0.754	0.364	1.158
CoBRASBRI	1.424	0.235	0.472	145	0.837	0.365	0.772

Table 14

Year II CoBRAS Subscores along Pre and Post-Intervention Dates

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
CoBRASS	0.208	0.649	1.533	138	0.128	4.201	2.741
CoBRASRP	0.080	0.778	1.961	139	0.052	2.334	1.190
CoBRASID	0.008	0.930	1.423	138	0.157	1.741	1.224
CoBRASBRI	0.584	0.446	0.111	139	0.912	0.098	0.884

Comparison of CoBRAS Scores by Demographic Variables

Associated Research Question 1a:

a. Are there significant differences in cultural attitudes when scores are examined by student demographics (i.e. gender, race, age, family background, etc.) with regard to:

i.) one's initial cultural attitudes and

ii.) change in one's cultural attitudes with the given intervention?

Research Hypothesis 1a, part i:

H_0: There is no significant difference in cultural attitudes when scores are examined by student demographics in regards to one's initial cultural attitudes.

H_a: There is a significant difference in cultural attitudes when scores are examined by student demographics in regards to one's initial cultural attitudes.

Research Hypothesis 1a, part ii:

H_0: There is no significant difference in cultural attitudes when scores are examined by student demographics in regards to change in one's cultural attitudes with the given intervention.

H_a: There is a significant difference in cultural attitudes when scores are examined by student demographics in regards to change in one's cultural attitudes with the given intervention.

While the previous section addressed the question of the change of incoming medical students' cultural attitudes following a given intervention during their first year of medical school, this section addresses the question of whether there are significant differences in CoBRAS scores when the sample is separated by various student demographics. These demographic factors include gender, race/ ethnicity, immigration status, income, social status, undergraduate major, completion of graduate degree prior to entering medical school, and age.

Tables 15-46 show the results of analysis of changes in CoBRAS scores and subscores when the sample is separated by the demographic variables of gender, race/ ethnicity, generational status, parental income, and self-described social status (The variables of major, post-graduate degree prior to entering medical school, and age are also discussed in this section without the accompanied tables due to the insignificance and repetitiveness of results.). Analysis of CoBRAS scores when the sample is separated by demographic variables for the pre- and post-intervention survey periods will determine if there are any significant changes in attitudes following the intervention. Additional analysis of mean CoBRAS scores for pre- and post-intervention periods, when separated by demographic variables, will examine if there were any significant changes in attitudes between survey periods when the sample is separated by demographic variables (e.g. men versus women). This will address the second part of the first research question regarding whether changes in color-blind racial attitudes exist when the sample is separated by various demographic variables. Unless specifically noted, all final analyses were conducted using independent t-tests (versus non-parametric Mann-Whitney tests). Use of independent t-tests helps to maintain power, reducing the probability of rejecting a false null hypothesis (type-II error). Non-parametric tests were conducted for all CoBRAS tests separated by demographic variables. Those variables that were found to be significant (i.e. gender and race) were included in the appendix. Except in one instance mentioned later in this chapter, nonparametric Mann-Whitney tests showed no difference in significance of findings, suggesting a normal population distribution.

Gender

Results of the analysis of CoBRAS scores (Table 15) for the pre- and post-intervention survey dates show that there is a significant difference in colorblind racial attitudes scores

between male and female students for the pre-intervention periods (Year I Pre-intervention p = 0.005, Year II Pre-intervention p = 0.025). However, the difference in colorblind attitudes becomes non-significant for the post-intervention periods (Year I Post-Intervention p = 0.074, Year II Post-Intervention p = 0.067). These numbers suggest that when the sample is separated by gender, men had a higher mean colorblind racial attitude score than women as they entered medical school, with the significant difference between males and females disappearing by the end of the first year of medical school. To further evaluate this, Tables 16 and 17 report the changes in mean CoBRAS score between the Year I and Year II (i.e. Year I pre- versus post-intervention dates, Year II pre- versus post-intervention dates), separated by gender. Table 16 reports a non-significant decrease in CoBRAS mean score for both men (Year I Pre-intervention mean = 67.00, Year I Post-intervention mean = 64.21, p = 0.408) and women (Year I Pre-intervention mean =59.68, Year I Post-intervention mean = 56.42, p = 0.371) for Year I. Table 19 reports a non-significant decrease in CoBRAS mean scores for men (Year II Pre-intervention mean = 64.35, Year II Post-intervention mean = 62.50, and p = 0.670) and women (Year II Pre-intervention mean = 58.43, Year II Post-intervention mean = 53.00, and p = 0.112).

Results of the analysis of CoBRAS unawareness in racial privilege (CoBRASRP) scores (Table 18) show that men had a higher but non-significant mean score (greater unawareness of racial privilege) than women for each survey period (Year I, Pre-intervention p = 0.366, Year I Post-intervention p = 0.874, Year II Pre-intervention p = 0.472, and Year II Post-intervention p = 0.070). This suggests that there was no significant difference in unawareness of racial privilege between men and women for each survey period.

Table 15

Color-Blind Racial Attitude Scores (CoBRASS) by Gender for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-intervention				
Male	57	67.00	12.651	1.676
Female	40	59.68	12.133	1.918
Year I, Post-intervention				
Male	23	65.13	15.947	3.323
Female	24	56.42	16.699	3.409
Year II, Post-intervention				
Male	48	64.35	14.423	2.082
Female	58	58.43	12.305	1.616
Year II, Post-intervention				
Male	14	64.50	13.518	3.613
Female	20	53.00	14.935	3.340

Table 15

CoBRASS Scores by Gender for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	0.240	0.626	2.855	95	0.005**	7.325	2.566
Year II, Post-Intervention	0.175	0.678	1.828	45	0.074	8.714	4.767
Year II, Pre-Intervention	0.669	0.415	2.282	104	0.025*	5.923	2.596
Year II, Post-Intervention	0.396	0.533	1.896	32	0.067	9.50	5.010

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 16

CoBRASS Scores by Gender for Year I

Administration Date	N	Mean	Std. Deviation	SE Mean
Men				
Year I Pre-Intervention	57	67.00	12.651	1.676
Year I Post-Intervention	24	64.21	16.237	3.314
Women				
Year I Pre-Intervention	40	59.68	12.133	1.918
Year I Post-Intervention	24	56.42	16.699	3.409

Table 16

CoBRASS Scores by Gender for Year I, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Men	3.439	0.067	0.832	79	0.408	2.792	3.356
Women	1.408	0.240	0.901	62	0.371	3.258	3.615

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 17

CoBRASS Scores by Gender for Year II

Administration Date	N	Mean	Std. Deviation	SE Mean
Men				
August 2008	48	64.35	14.423	2.082
May 2009	14	62.50	13.518	3.613
Women				
August 2008	58	58.43	12.305	1.616
May 2009	20	53.00	14.935	3.340

Table 17

CoBRASS Scores by Gender for the Year II, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Men	0.298	0.587	0.429	60	0.670	1.854	4.323
Women	0.810	0.371	1.610	76	0.112	5.431	3.374

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 18

CoBRAS Unawareness of Racial Privilege Subscore (CoBRASRP) by Gender for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
Male	59	26.07	6.638	0.864
Female	41	24.93	5.815	0.908
Year I, Post-Intervention				
Male	23	24.83	6.893	1.437
Female	23	24.48	6.775	1.413
Year II, Pre-Intervention				
Male	49	24.65	6.963	0.995
Female	58	23.79	5.347	0.702
Year II, Post-Intervention				
Male	14	24.00	5.477	1.464
Female	20	20.35	5.650	1.263

Table 18

CoBRAS Unawareness of Racial Privilege Subscore (CoBRASRP) by Gender for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	0.100	0.752	0.889	98	0.376	1.141	1.284
Year I, Post-Intervention	0.029	0.869	0.173	44	0.864	0.348	2.015
Year II, Pre-Intervention	2.898	0.092	0.722	105	0.472	0.860	1.191
Year II, Post-Intervention	0.013	0.911	1.877	32	0.070	3.650	1.945

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Results of the analysis of CoBRAS unawareness in institutional discrimination scores (CoBRASID; Table 19) for the pre- and post-intervention dates show that for the pre-intervention period, there is a significant difference in colorblind attitude scores between male and female students (Year I Pre-intervention $p = 0.005$, Year II Pre-intervention $p = 0.021$). This difference in colorblind attitudes scores continues to be significant for the post-intervention period for Year I and year II (Year I Post-intervention $p = 0.021$, Year II Post-intervention $p = 0.021$). These numbers suggest that men not only had a higher mean unawareness in institutional discrimination than women as they entered medical school, but this also continued for the end of the school year. The significant differences continued to exist for both year I (current medical school cultural competency curriculum) and year II (after implementation of the "enhanced" cultural competency curriculum). Further analysis of the Year I CoBRAS unawareness in institutional discrimination (CoBRASID) scores reveals that men (Table 20 Year I Pre-intervention mean score = 24.88, Year I Post-intervention mean = 25.13, $p = 0.878$) had a non-significant mean increase in score while women (Table 20; Year I Pre-intervention mean = 21.32, Year I Post-intervention mean = 20.70 and $p = 0.670$) had a non-significant mean decrease in color-blind racial attitudes related to institutional discrimination. Results of the analysis of the Year II CoBRSID scores reveal that both men (Table 21; Year I Pre-intervention mean = 24.60, Year II Post-intervention mean = 24.36, $p = 0.899$) and women (Table 23; Year I Pre-intervention mean = 21.84, Year II Post-intervention mean = 19.25, $p = 0.081$) had a non-significant decrease in mean CoBRASID scores. In other words, neither men nor women had a significant change in their unawareness of institutional discrimination from pre- and post-intervention periods.

Table 19

CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) by Gender for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
Male	59	24.88	6.494	0.845
Female	41	21.32	5.497	0.859
Year I Post-intervention				
Male	23	25.13	6.841	1.427
Female	23	20.70	5.708	1.190
Year II Pre-intervention				
Male	48	24.60	6.473	0.934
Female	58	21.84	5.613	0.737
Year II, Post-Intervention				
Male	14	24.36	6.184	1.653
Female	20	19.25	5.812	1.300

Table 19

Comparison of Gender and CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	1.759	0.188	2.870	98	0.005**	3.564	1.242
Year I Post-intervention	0.341	0.562	2.386	44	0.021*	4.435	1.929
Year II Pre-intervention	0.783	0.378	2.350	104	0.021*	2.759	1.174
Year II, Post-Intervention	0.004	0.947	2.457	32	0.020*	5.107	2.079

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 20

Comparison of CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) by Gender for Year I

Administration Date	N	Mean	Std. Deviation	SE Mean
Men				
Pre-intervention, Year I	59	24.88	6.494	0.845
Post-intervention, Year I	23	25.13	6.841	1.429
Women				
Pre-intervention, Year I	41	21.32	5.497	0.859
Post-intervention, Year I	23	20.70	5.708	1.190

Table 20

Comparison of CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) by Gender for Year I, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Men	0.059	0.813	-0.154	80	0.878	-0.249	1.621
Women	0.001	0.978	0.428	62	0.670	0.621	1.452

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 21

CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) by Gender for Year II

Administration Date	N	Mean	Std. Deviation	SE Mean
Men				
Pre-intervention	48	24.60	6.473	0.934
Post-intervention	14	24.36	6.184	1.653
Women				
Pre-intervention	58	21.84	5.613	0.737
Post-intervention	20	19.25	5.812	1.300

Table 21

CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) by Gender for Year II, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Men	0.022	0.883	0.127	60	0.899	0.247	1.948
Women	0.204	0.652	1.767	76	0.081	2.598	1.468

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

The results of the analysis of CoBRAS unawareness in blatant racial issues scores for the pre- and post-intervention dates (CoBRASBRI; Table 22) show that for the pre-intervention periods, there was a significant difference in colorblind attitudes scores between male and female students. (Year I Pre-intervention $p = 0.004$ and Year II Pre-intervention $p = 0.008$). This difference in colorblind attitudes scores becomes non-significant for the post-intervention periods of Year I and II (Year I Post-Intervention $p = 0.187$ and Year II Post-intervention $p = 0.677$). Results of the analysis of the Year I CoBRASBRI scores (Table 23) reveal that: (1) men had a non-significant decrease in unawareness of blatant racial issues (Pre-intervention mean score = 15.75, Post-intervention mean = 14.92, $p = 0.491$) and (2) women had a non-significant mean increase in unawareness in blatant racial issues (Pre-intervention mean = 13.26, Post-intervention mean = 13.30 and $p = 0.970$). Results of the analysis of the Year II CoBRASBRI scores (Table 26), reveal that: (1) men had a non-significant decrease in unawareness in blatant racial issues (Pre-intervention mean score = 15.00, Post-intervention mean = 14.14, $p = 0.516$) and (2) women had a mean non-significant increase in color-blind racial attitudes scores related to institutional discrimination (Pre-intervention mean = 12.79, Post-intervention mean = 13.40 and $p = 0.603$).

(For non-parametric tests see Appendix B, Tables 49-58.)

Table 22

CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) by Gender for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
Male	58	15.64	3.778	0.496
Female	42	13.26	4.266	0.658
Year I, Post-Intervention				
Male	23	15.17	4.886	1.019
Female	23	13.30	4.567	0.952
Year II, Pre-Intervention				
Male	49	15.00	4.203	0.600
Female	58	12.79	4.175	0.548
Year II, Post-Intervention				
Male	14	14.14	4.769	1.275
Female	20	13.40	5.276	1.180

Table 22

CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) by Gender for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	1.039	0.331	2.940	98	0.004**	2.376	0.808
Year I, Post-Intervention	0.030	0.863	1.341	44	0.187	1.870	1.395
Year II, Pre-Intervention	0.022	0.882	2.716	105	0.008*	2.207	0.813
Year II, Post-Intervention	0.202	0.656	0.420	32	0.677	0.743	1.769

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 23

CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) by Gender for Year I

Administration Date	N	Mean	Std. Deviation	SE Mean
Men				
Year I, Pre-Intervention	57	15.75	3.705	0.491
Year I, Post-Intervention	14	14.92	4.942	1.009
Women				
Year I, Pre-Intervention	42	13.26	4.266	0.658
Year I, Post-Intervention	23	13.30	4.567	0.952

Table 23

CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) by Gender for Year I, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Men	2.463	0.121	0.839	79	0.404	0.838	0.999
Women	0.051	0.822	-0.37	63	0.970	-0.042	1.134

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 24

CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) by Gender for Year II

Administration Date	N	Mean	Std. Deviation	SE Mean
Men				
Year II, Pre-Intervention	49	15.00	4.203	0.600
Year II, Post-Intervention	14	14.14	4.769	1.275
Women				
Year II, Pre-Intervention	58	12.79	4.175	0.548
Year II, Post-Intervention	20	13.40	5.276	1.180

Table 24

CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) by Gender for Year II, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Men	0.046	0.831	0.653	61	0.516	0.857	1.312
Women	1.098	0.298	-0.523	76	0.603	-0.607	1.161

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Race/ Ethnicity

Results of the analysis of color-blind racial attitude subscores (CoBRASS; Table 25) separated by race/ ethnicity (whites and non-whites[7]) show that for the pre-intervention period, there is a significant difference in colorblind attitudes scores between white and non-white students (Year I Pre-intervention p = 0.001, Year I Pre-intervention p = 0.031). However, significant differences disappear for the Year I and II Post-intervention periods (Year I Post-intervention p = 0.081, Year II Post-intervention p = 0.347). These numbers suggest that whites had a higher mean colorblind racial attitude score than nonwhites as they entered medical school, with the significant difference disappearing at the end of the year for years I and II. Results of the analysis of changes in general color-blind racial attitudes scores from the pre-intervention survey date to the post-intervention survey date (CoBRASS scores; Year I, Table 26) showed that both whites (Pre-intervention, mean = 68.61, Post-intervention, mean =66.50, p = 0.645) and non whites (Pre-intervention mean =59.61, Post-intervention mean =59.31, p = 0.547) had a non-significant decrease in mean score (decrease in color-blind racial attitudes) throughout the year. Results of the analysis of changes in general color-blind racial attitudes scores from pre- to post-intervention survey dates (Year II, Table 27) show that both whites (Pre-intervention mean = 64.57, Post-intervention mean =59.67, p = 0.300) and non-whites (Pre-intervention mean = 58.84, Post-intervention mean =54.74, p = 0.171) had a non-significant decrease in mean score from the pre-intervention date to post-intervention date. Overall, there was no significance change in color-blind racial attitudes scores for the school year (Pre and post-intervention, both Years I and II) for whites and non-whites.

[7] For the purpose of this paper, the term "non-whites" refers to the racial categories of African American, Asian American and Native American, the ethnicities of Latino/a and Middle Eastern, and if the student selected, "other."

Results of the analysis of CoBRAS unawareness in racial privilege scores (CoBRASRP; Table 28) for the pre- and post-intervention dates show that for the pre-intervention period there was a significant difference in scores between white and non-white students (Year I Pre-intervention $p = 0.013$ and Year II Pre-intervention $p = 0.008$). This difference in unawareness in colorblind racial attitudes scores continues to be significant for the Year I post-intervention period but becomes non-significant for the Year II post-intervention period (Year I post-intervention period $p = 0.034$ and Year II Post-intervention $p = 0.189$). The significant difference in CoBRASRP subscores disappear for the Year II Post-intervention administration and could be due to either: (1) whites becoming more aware of general color-blind racism throughout Year II and/ or (2) non-whites becoming less aware of general color-blind racism as Year II progresses. To further evaluate this, results from the analysis of changes in unawareness in racial privilege from pre- and post-intervention survey dates (Year I; Table 29) show that whites (Pre-intervention mean = 27.24, Post-intervention, mean =27.67, $p = 0.823$) had a slight non-significant increase in mean score. Non-whites (Pre-intervention mean =24.07, Post-intervention mean =23.22, $p = 0.547$) had a non-significant decrease in mean score from the first survey administration (pre-intervention) to the second survey administration (post-intervention) for Year I. Results of the analysis in changes of unawareness of racial privilege from the pre-intervention survey date to the post-intervention survey date (Year II; Table 30) show that both whites (Pre-intervention mean = 64.57, Post-intervention =59.67, $p = 0.300$) and non whites (Pre-intervention mean =58.84, Post-intervention mean =54.74, $p = 0.171$) had a non-significant decrease in mean score throughout the year. Overall, there is a significant initial difference in unawareness of racial privilege scores when the sample is separated by race/ ethnicity that

continued to persist for Year I, but no significant change in unawareness of racial privilege throughout the year for whites and non-whites.

Results of the analysis of CoBRAS unawareness in institutional discrimination scores (CoBRASID; Table 31) show a significant difference in colorblind racial attitudes scores between male and female students in Year I (Year I Pre-intervention p = 0.000 and Year I Post-intervention p = 0.011) and no significant difference in Year II scores (Year II Pre-intervention p = 0.150 and Year II Post-intervention p = 0.169). This suggests that whites enter medical school with greater unawareness of institutional discrimination than non-whites for Year I with this gap constant for the pre-intervention survey date and the post-intervention survey date.

Results from the analysis of CoBRAS unawareness in blatant racial issues (CoBRASBRI; Table 32) for the pre- and post-intervention periods is somewhat inconsistent. The results of the analysis show that whites had a higher, significant mean score than non-whites for the Year I Post-intervention survey period only(Year I Post-intervention p = 0.044) with a non-significant mean score for the other three survey periods (Year I Pre-intervention p = 0.127, Year II Pre-intervention p = 0.380 and Year II Post-intervention p = 0.657). In addition, the mean score for unawareness of blatant racial issues actually increased for whites during pre- and post-intervention survey periods of Year I (Pre-intervention mean =15.39, Post-intervention mean 16.29, p = 0.479). For Year II, the mean CoBRASBRI score increased for nonwhites between the Pre-intervention and Post-intervention survey periods (Pre-Intervention mean score 13.53, Post-Intervention mean score 14.05). Another important issue to note is that the mean score for non-whites was higher than whites for the Year II Post-intervention administration although it was a non-significant finding (Year II Pre-Intervention score =13.53, Year II Post-Intervention score =14.05, p = 0.611). Overall, changes in unawareness of blatant racial issues was inconsistent

with higher mean scores (greater unawareness) for whites for Year I and higher for non-whites in Year II.

(For non-parametric tests see Appendix B, Tables 59-68.)

Table 25

CoBRASS Scores by Race/ Ethnicity for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
White	44	68.61	12.803	1.930
Non-White	53	59.70	12.286	1.688
Year I, Post-Intervention				
White	16	66.50	21.793	5.448
Non-White	31	57.68	12.851	2.308
Year II, Pre-Intervention				
White	49	64.57	15.096	2.157
Non-White	55	58.84	10.964	1.478
Year II, Post-Intervention				
White	15	59.67	18.348	4.738
Non-White	19	54.74	11.642	2.671

Table 25

CoBRASS Scores by Race/ Ethnicity for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	0.602	0.440	3.491	95	0.001***	8.916	2.554
Year I, Post-Intervention	2.576	0.115	1.749	45	0.081	8.823	5.043
Year II, Pre-Intervention	6.886	0.010	2.193	86.699	0.031*	5.735	2.568
Year II, Post-Intervention	3.440	0.073	0.955	32	0.347	4.930	5.164

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 26

CoBRASS Scores by Race/ Ethnicity for Year I

Administration Date	N	Mean	Std. Deviation	SE Mean
Whites				
Pre-Intervention	44	68.61	12.803	1.930
Post-Intervention	16	66.50	21.793	5.448
Non-whites				
Pre-Intervention	54	59.39	12.380	1.685
Post-Intervention	31	57.68	12.851	2.308

Table 26

CoBRASS Scores by Race/ Ethnicity for Year I, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Whites	2.786	0.101	0.463	58	0.645	2.114	4.563
Non-whites	0.102	0.751	0.605	83	0.547	1.711	2.829

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 27

CoBRASS Scores by Race/ Ethnicity for Year II

Administration Date	N	Mean	Std. Deviation	SE Mean
Whites				
Pre-Intervention	49	64.57	15.096	2.157
Post-Intervention	15	59.67	18.348	4.738
Non-whites				
Pre-Intervention	55	58.84	10.964	1.478
Post-Intervention	19	54.74	11.642	2.671

Table 27

CoBRASS Scores by Race/ Ethnicity for Year II, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Whites	0.599	0.442	1.046	62	0.300	4.905	4.688
Non-whites	0.002	0.966	1.383	72	0.171	4.100	2.964

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 28

CoBRAS Unawareness of Racial Privilege Subscore (CoBRASRP) by Race/ Ethnicity for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
White	45	27.24	6.202	0.925
Non-White	55	24.07	6.280	0.847
Year I, Post-Intervention				
White	15	27.67	6.586	1.701
Non-White	31	23.19	6.447	1.158
Year II, Pre-Intervention				
White	50	26.00	6.931	0.980
Non-White	55	22.84	4.756	0.641
Year II, Post-Intervention				
White	15	23.33	7.353	1.902
Non-White	19	20.68	4.001	0.918

Table 28

CoBRAS Unawareness of Racial Privilege Subscore (CoBRASRP) by Race/ Ethnicity for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	0.066	0.798	2.527	98	0.013*	3.170	1.255
Year I, Post-Intervention	0.120	0.731	2.191	44	0.034*	4.473	2.042
Year II, Pre-Intervention	9.130	0.003	2.701	85.682	0.008*	3.164	1.171
Year II, Post-Intervention	9.966	0.003	1.341	32	0.189	2.649	1.976

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 29

CoBRASID Scores by Race/ Ethnicity for Year I

Administration Date	N	Mean	Std. Deviation	SE Mean
Whites				
August 2007	45	25.93	6.133	0.914
May 2008	15	26.40	6.322	1.632
Non-whites				
August 2007	54	21.37	5.848	0.796
May 2008	32	20.88	6.389	1.129

Table 29

CoBRASID Scores by Race/ Ethnicity for Year I, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Whites	0.040	0.843	-0.253	58	0.801	-0.467	1.842
Non-whites	0.224	0.638	0.367	84	0.715	0.495	1.350

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 30

CoBRASBRP Scores by Race/ Ethnicity for Year II

Administration Date	N	Mean	Std. Deviation	SE Mean
Whites				
August 2008	50	26.00	6.931	0.980
May 2009	15	23.33	7.365	1.902
Non-whites				
August 2008	55	22.84	4.756	0.641
May 2009	19	20.68	4.001	0.918

Table 30

CoBRASRP Scores by Race/ Ethnicity for Year II, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Whites	0.245	0.623	1.289	63	0.202	2.667	2.070
Non-whites	0.933	0.337	1.766	72	0.082	2.152	1.219

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 31

CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) by Race/ Ethnicity for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
White	45	25.93	6.133	0.914
Non-White	55	21.16	5.993	0.808
Year I, Post-Intervention				
White	15	26.40	6.322	1.632
Non-White	31	21.23	6.174	1.109
Year II, Pre-Intervention				
White	49	24.18	6.304	0.901
Non-White	55	22.47	5.725	0.772
Year II, Post-Intervention				
White	15	23.07	7.255	1.873
Non-White	19	20.00	5.467	1.254

Table 31

CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) by Race/ Ethnicity for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	0.137	0.712	3.781	97	0.000***	4.563	1.207
Year I, Post-Intervention	0.007	0.932	2.644	44	0.011*	5.179	1.957
Year II, Pre-Intervention	0.461	0.499	1.451	102	0.150	1.711	1.179
Year II, Post-Intervention	1.472	0.234	1.407	32	0.169	3.067	2.180

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 32

Race/ Ethnicity and CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
White	44	15.39	3.786	0.571
Non-White	56	14.02	4.359	0.582
Year I, Post-Intervention				
White	15	16.27	5.035	1.300
Non-White	31	13.26	4.389	0.788
Year II, Pre-Intervention				
White	50	14.28	4.819	0.682
Non-White	55	13.53	3.800	0.512
Year II, Post-Intervention				
White	15	13.27	6.135	1.584
Non-White	19	14.05	4.062	0.932

Table 32

Race/ Ethnicity and CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	1.345	0.249	1.650	98	0.102	1.369	0.829
Year I, Post-Intervention	0.399	0.531	2.077	44	0.044*	3.009	1.448
Year II, Pre-Intervention	4.772	0.031	0.883	93.064	0.380	0.753	0.853
Year II, Post-Intervention	1.743	0.196	-0.448	32	0.657	-0.786	1.753

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Immigration Status

Results of the analysis of colorblind racial attitudes scores (CoBRASS; Table 33) for the pre- and post-intervention dates show that students of third generation or later have a consistently higher but non-significant mean score than first or second generation students for each survey period (Year I Pre-intervention $p = 0.359$, Year I Post-intervention $p = 0.097$, Year II Pre-intervention $p = 0.113$, Year II Post-intervention $p = 0.277$). These findings were consistent with all subscales (CoBRASRP, CoBRASID, and CoBRASBRI; see Tables 34-36 below). Overall, there was no significant difference in color-blind racial attitudes scores, level of unawareness of racial privilege, unawareness of institutional discrimination, or unawareness of blatant racial issues between students of first or second generation and those of third or greater generation for Years I and II.

Table 33

CoBRASS Scoresby Immigration Status for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
≥ 3rd Generation	51	64.67	14.709	2.060
1st or 2nd Generation	45	62.20	11.443	1.706
Year I, Post-Intervention				
≥ 3rd Generation	21	65.19	18.173	3.966
1st or 2nd Generation	26	57.04	14.863	2.915
Year II, Pre-Intervention				
≥ 3rd Generation	47	63.74	15.156	2.211
1st or 2nd Generation	57	59.40	11.873	1.573
Year II, Post-Intervention				
≥ 3rd Generation	14	60.29	17.617	4.708
1st or 2nd Generation	20	54.55	12.672	2.834

Table 33

CoBRASS Scores by Immigration Status for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	5.310	0.023	0.922	92.605	0.359	2.467	2.716
Year I, Post-Intervention	1.333	0.254	1.692	45	0.097	8.152	4.812
Year II, Pre-Intervention	6.614	0.012	86.199	86.199	0.113	4.341	2.651
Year II, Post-Intervention	2.386	0.132	1.106	32	0.277	5.736	5.185

Table 34

CoBRAS Unawareness of Racial Privilege Subscore (CoBRASRP) by Immigration Status for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
≥ 3rd Generation	53	25.96	6.418	0.882
1st or 2nd Generation	46	24.87	6.438	0.949
Year I, Post-Intervention				
≥ 3rd Generation	21	26.38	6.917	1.509
1st or 2nd Generation	26	23.23	6.276	1.231
Year II, Pre-Intervention				
≥ 3rd Generation	47	25.40	7.008	1.002
1st or 2nd Generation	57	23.35	5.253	0.696
Year II, Post-Intervention				
≥ 3rd Generation	14	23.14	6.927	1.851
1st or 2nd Generation	20	20.95	4.828	1.080

Table 34

CoBRAS Unawareness of Racial Privilege Subscore (CoBRASRP) by Immigration Status for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	0.002	0.962	0.843	97	0.401	1.813	1.295
Year I, Post-Intervention	0.364	0.549	1.635	45	0.109	3.150	1.927
Year II, Pre-Intervention	6.006	0.016	1.661	83.726	0.101	2.053	1.203
Year II, Post-Intervention	5.122	0.031	1.023	21.635	0.317	2.193	2.012

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 35

CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) by Immigration Status for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
≥ 3rd Generation	52	24.23	6.865	0.952
1st or 2nd Generation	47	22.04	5.909	0.862
Year I, Post-Intervention				
≥ 3rd Generation	21	23.81	7.891	1.722
1st or 2nd Generation	25	22.16	5.390	1.108
Year II, Pre-Intervention				
≥ 3rd Generation	47	24.13	6.124	0.893
1st or 2nd Generation	57	22.35	6.154	0.815
Year II, Post-Intervention				
≥ 3rd Generation	14	23.57	7.122	1.903
1st or 2nd Generation	20	19.80	5.512	1.232

Table 35

CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) by Immigration Status for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	1.810	0.182	1.691	97	0.094	2.188	1.294
Year I, Post-Intervention	1.981	0.166	0.859	44	0.406	1.650	1.967
Year II, Pre-Intervention	0.018	0.893	1.469	102	0.145	1.777	1.210
Year II, Post-Intervention	1.151	0.291	1.741	32	0.091	3.771	2.166

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 36

CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) by Immigration Status for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
≥ 3rd Generation	52	14.33	4.301	0.596
1st or 2nd Generation	47	14.81	4.031	0.588
Year I, Post-Intervention				
≥ 3rd Generation	21	15.00	5.404	1.179
1st or 2nd Generation	25	13.60	4.173	0.835
Year II, Pre-Intervention				
≥ 3rd Generation	47	14.21	4.709	0.687
1st or 2nd Generation	57	13.70	3.964	0.525
Year II, Post-Intervention				
≥ 3rd Generation	14	13.57	6.022	1.609
1st or 2nd Generation	20	13.80	4.336	0.970

Table 36

CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) by Immigration Status for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	0.727	0.346	-0.573	97	0.568	-0.482	0.850
Year I, Post-Intervention	1.184	0.289	0.991	44	0.327	1.400	1.413
Year II, Pre-Intervention	2.147	0.146	0.601	102	0.549	0.511	0.850
Year II, Post-Intervention	0.900	0.350	-0.129	32	0.898	-0.229	1.773

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Income

Results of the analysis of color-blind racial attitudes subscores (CoBRAS; Table 37) for the pre- and post-intervention dates show that students who had parental incomes of less than $100,000/ year consistently had lower mean scores than those of parental incomes of greater than $100,000/ year for each survey period. However, these findings were only found to be significant for the Year I Post-intervention administration (Year I Pre-intervention p = 0.085, Year I Post-intervention p = 0.005, Year II Pre-intervention p = 0.199, Year II Post-intervention p = 0.320). Additional results of the analysis comparing mean CoBRASS changes for Year I (Table 38) show that students with parental incomes less than $100,000 had a significantly lower mean score (lower color-blind racial attitudes) during the pre-intervention and post-intervention survey periods (Year I Pre-intervention mean score = 61.64, p=0.085, Post-intervention mean score =55.40, p =0.048). Though students whose parental income was greater than $100,000 had a higher mean CoBRASS score for Year I, it was a non-significant finding (Year I Pre-intervention mean score =66.40 p=0.85, Year I Post-intervention mean score =70.93, p =0.325). Overall, results for Year I found that colorblind racial attitudes scores were significantly lower for those with parental incomes less than $100,000 for the post-intervention survey period compared to both (1) pre-intervention and (2) students with parental incomes greater than $100,000.

Results of the analysis of the CoBRAS unawareness in racial privilege (CoBRASRP) scores (Table 39) for the pre- and post-intervention dates show that those students who had parental incomes of less than $100,000/ year consistently had lower mean scores than those of parental incomes of greater than $100,000/ year. These results were found to be significant for the Year I Post-Intervention date (Year I Pre-intervention p = 0.351, Year I Post-intervention p = 0.018, Year II Pre-intervention p = 0.538, Year II Post-intervention p = 0.553).

Results of the analysis of the CoBRAS unawareness in institutional discrimination (CoBRASID) scores (Table 40) found that those students who had parental incomes of less than $100,000/ year consistently had lower mean scores than those who had parental incomes of greater than $100,000/ year. Mean scores were found to be significant for both Year I survey administration dates and non-significant for both the Year I Pre-intervention and Post-intervention dates (Year I Pre-intervention $p = 0.044$, Year I Post-intervention $p = 0.19$, Year II Pre-intervention $p = 0.079$, Year II Post-intervention $p = 0.129$).

Results of the analysis of CoBRAS unawareness in blatant racial issues scores, (CoBRASBRI; Table 41), show that students who had parental incomes of less than $100,000/ year consistently had lower mean scores (less unawareness of blatant racial issues) than those of parental incomes of greater than $100,000/ year for all four survey periods. However, these findings were not significant for all four survey administration dates (Year I Pre-intervention $p = 0.119$, Year I Post-intervention $p = 0.061$, Year II Pre-intervention $p = 0.503$, Year II Post-intervention $p = 0.728$).

Table 37

CoBRASS Scores by Income for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
< $100,000	53	61.64	12.677	1.741
≥ $100,000	42	66.40	13.895	2.144
Year I, Post-Intervention				
< $100,000	29	57.00	12.641	2.347
≥ $100,000	14	70.90	17.202	4.597
Year II, Pre-Intervention				
< $100,000	58	59.91	13.001	1.707
≥ $100,000	44	63.39	13.969	2.106
Year II, Post-Intervention				
< $100,000	20	54.75	15.977	3.572
≥ $100,000	14	60.00	13.243	3.539

Table 37

CoBRASS Scores by Income for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	0.650	0.442	-1.743	93	0.085	-4.763	2.733
Year I, Post-Intervention	1.956	0.170	-3.004	41	0.005**	-13.929	4.636
Year II, Pre-Intervention	0.519	0.473	-1.294	100	0.199	-3.473	2.684
Year II, Post-Intervention	1.255	0.271	-1.009	32	0.320	-5.250	5.201

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 38

CoBRASS Scores by Income for Year I

Administration Date	N	Mean	Std. Deviation	SE Mean
< $100,000				
Year I, Pre-Intervention	53	61.64	12.677	1.741
Year I, Post-Intervention	30	55.40	15.201	2.775
≥ $100,000				
Year I, Pre-Intervention	42	66.40	13.895	2.144
Year II, Post-Intervention	14	70.93	17.202	4.597

Table 38

CoBRASS Scores by Income for Year I, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
< $100,000	0.370	0.545	2.004	81	0.048	6.242	3.115
≥ $100,000	0.935	0.338	-0.993	54	0.325	-4.524	4.555

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 39

CoBRAS Unawareness of Racial Privilege Subscore (CoBRASRP) by Income for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
< $100,000	53	25.04	6.158	0.846
≥ $100,000	43	26.30	6.801	1.049
Year I, Post-Intervention				
< $100,000	28	22.79	6.006	1.115
≥ $100,000	14	28.14	7.594	2.030
Year II, Pre-Intervention				
< $100,000	58	24.03	6.003	0.788
≥ $100,000	44	24.80	6.349	0.957
Year II, Post-Intervention				
< $100,000	20	21.35	6.532	1.460
≥ $100,000	14	22.57	4.669	1.248

Table 39

CoBRAS Unawareness of Racial Privilege Subscore (CoBRASRP) by Income for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	0.468	0.495	-0.998	96	0.323	-1.284	1.292
Year I, Post-Intervention	1.131	0.294	-2.468	40	0.018*	-5.357	2.170
Year II, Pre-Intervention	0.001	0.973	-0.619	100	0.538	-0.761	1.230
Year II, Post-Intervention	2.014	0.166	-0.599	32	0.553	-1.221	2.037

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 40

CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) by Income for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
< $100,000	53	22.28	6.686	0.918
≥ $100,000	43	24.74	5.849	0.891
Year I, Post-Intervention				
< $100,000	28	21.36	6.314	1.143
≥ $100,000	14	26.50	6.595	1.763
Year II, Pre-Intervention				
< $100,000	58	22.24	5.921	0.778
≥ 100K	44	24.36	6.070	0.915
Year II, Post-Intervention				
< $100,000	20	19.95	6.970	1.558
≥ $100,000	14	23.36	5.078	1.357

Table 40

CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) by Income for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	1.271	0.262	-2.042	96	0.044*	-2.652	1.814
Year I, Post-Intervention	0.022	0.883	-2.452	40	0.019*	-5.143	2.097
Year II, Pre-intervention,	0.104	0.748	-1.773	100	0.079	-2.122	1.197
Year II, Post-Intervention	2.825	0.103	-1.559	32	0.129	-3.407	2.185

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 41

CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) by Income for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
< $100,000	56	14.02	4.141	0.553
≥ $100,000	42	15.36	4.201	0.648
Year I, Post-Intervention				
< $100,000	28	13.36	4.156	0.783
≥ $100,000	14	16.29	5.511	1.473
Year II, Pre-Intervention				
< $100,000	58	13.64	4.652	0.611
≥ $100,000	44	14.23	4.005	0.604
Year II, Post-Intervention				
< $100,000	20	13.45	4.707	1.053
≥ $100,000	14	14.07	5.581	1.492

Table 41

CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) by Income for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	0.052	0.820	-1.575	96	0.119	-1.339	0.851
Year I, Post-Intervention	2.477	0.125	-1.928	40	0.061	-2.929	1.519
Year II, Pre-Intervention	2.216	0.140	-0.672	100	0.503	-0.589	0.877
Year II, Post-Intervention	0.071	0.791	-0.351	32	0.728	-0.621	1.770

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Social Status

Results of the analysis of color-blind racial attitudes subscores (Table 42) for the pre- and post-intervention dates separated by social status, show that there was a generally lower mean score for students of self-described lower/ working class backgrounds compared to those students of self-described middle/ upper middle/ elite classes for each survey period. The one exception is the Year I Pre-intervention date where students of self-described lower/ working class had a slightly higher mean score than those of self-described middle/ upper-middle/ elite class. Of these results, only the results from the analysis of Year II Pre-intervention CoBRAS were found to be significant. Specifically students with lower/ working class social status entered medical school with lower color-blind racial attitudes scores than students of middle/ upper-middle/ elite backgrounds (Year I Pre-intervention $p = 0.910$, Year I Post-intervention $p = 0.885$, Year II Pre-intervention $p = 0.010$, Year II Post-Intervention $p = 0.284$). Additional analysis between the Year II survey periods was performed (Table 43). Results show that both those with lower social status and middle/ upper middle/ elite class had a non-significant decrease in CoBRASS mean score for pre- and post-intervention survey periods of Year II (lower/ working class $p = 0.441$, middle/ upper middle/ elite class $p = 0.144$).

The results from the analysis of CoBRAS unawareness in racial privilege scores (CoBRASRP; Table 44) for pre- and post-intervention dates were inconsistent and non-significant. Results show a non-significant lower mean score from students of self-described lower/ working class backgrounds than those students of self-described middle/ upper middle/ elite classes for the pre- and post-intervention Year II survey periods. At the same time, results show a higher non-significant mean score for students with lower/ working class backgrounds than middle/ upper middle/ elite classes for the Year I Pre-Intervention and Year I Post-

intervention dates (Year I Pre-intervention p = 0.449, Year I Post-intervention p = 0.978, Year II Pre-intervention p = 0.157, Year II Post-intervention p = 0.825).

Results of the analysis of CoBRAS unawareness in institutional discrimination scores (CoBRASID; Table 45) for the pre- and post-intervention survey dates show that that students of self-described lower/working class social status consistently had a lower mean score than students of self-described middle/ upper middle/ elite class. Despite this finding being consistent, it was not significant for any of the survey administration periods (Year I Pre-intervention p = 0.301, Year I Post-intervention p = 0.837, Year II Pre-intervention p = 0.000, Year II Post-intervention p = 0.083).

Results of the analysis of CoBRAS unawareness in blatant racial issues scores (CoBRASBRI; Table 46) for the pre- and post-intervention dates were inconsistent and non-significant. These results show that students of self-described lower/working class backgrounds have a lower mean score than those students of self-described middle/ upper middle/ elite classes for each of the four survey periods with the exception of the Year I Post-intervention date. For the Year I Post-intervention date students of self-described lower/ working class had a slightly higher mean score than those of self-described middle/ upper-middle/ elite class (Year I Pre-intervention p = 0.415, Year I Post-intervention p = 0.966, Year II Pre-intervention p = 0.395, Year II Post-intervention p = 0.101).

Table 42

CoBRASS Scores by Social Status for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
"Lower/Working Class"	14	64.07	15.838	4.233
"Middle/ Upper Middle/ Elite Class"	82	63.63	12.940	1.429
Year I, Post-Intervention				
"Lower/Working Class"	11	60.82	11.286	3.403
"Middle/ Upper Middle/ Elite Class"	36	61.58	16.247	2.708
Year II, Pre-Intervention				
"Lower/Working Class"	28	56.00	12.068	2.281
"Middle/ Upper Middle/ Elite Class"	76	63.54	13.308	1.527
Year II, Post-Intervention				
"Lower/Working Class"	10	52.60	11.157	3.528
"Middle/ Upper Middle/ Elite Class"	24	58.71	16.115	3.289

Table 42

CoBRASS Score by Social Status for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	0.159	0.691	0.113	94	0.910	0.437	3.869
Year I, Post-Intervention	2.277	0.138	-0.145	45	0.885	-0.765	5.266
Year II, Pre-Intervention	0.410	0.524	-2.625	102	0.010*	-7.539	2.872
Year II, Post-Intervention	1.197	0.282	-1.090	32	0.284	-6.108	5.604

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 43

CoBRASS Scores by Social Status for Year II

Administration Date	N	Mean	Std. Deviation	SE Mean
"Lower/Working Class"				
Year I, Pre-Intervention	28	56.00	12.068	2.281
Year I, Post-Intervention	10	52.60	11.157	3.528
"Middle/ Upper Middle/ Elite Class"				
Year I, Pre-Intervention	76	63.54	13.308	1.527
Year I, Post-Intervention	24	58.71	16.115	3.289

Table 43

CoBRASS Scores by Race/ Ethnicity for Year II, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
"Lower/Working Class"	0.152	0.699	0.779	36	0.441	3.400	4.364
"Middle/ Upper Middle/ Elite Class"	0.775	0.381	1.472	98	0.144	4.831	3.282

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 44

CoBRAS Unawareness of Racial Privilege Subscore (CoBRASRP) by Social Status for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
"Lower/Working Class"	16	26.69	7.587	1.897
"Middle/ Upper Middle/ Elite Class"	83	25.37	6.072	0.667
Year I, Post-Intervention				
"Lower/Working Class"	10	24.60	3.748	1.185
"Middle/ Upper Middle/ Elite Class"	36	24.67	7.426	1.238
Year II, Pre-Intervention				
"Lower/Working Class"	28	22.96	6.386	1.207
"Middle/ Upper Middle/ Elite Class"	76	24.87	5.920	0.679
Year II, Post-Intervention				
"Lower/Working Class"	10	22.20	6.339	2.004
"Middle/ Upper Middle/ Elite Class"	24	21.71	5.684	1.160

Table 44

CoBRAS Unawareness of Racial Privilege Subscore (CoBRASRP) by Social Status for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	0.601	0.440	0.760	97	0.449	1.314	1.728
Year I, Post-Intervention	4.009	0.051	-0.027	44	0.978	-0.067	2.329
Year II, Pre-Intervention	0.309	0.580	-1.424	102	0.157	-1.904	1.337
Year II, Post-Intervention	0.176	0.678	0.222	32	0.825	0.492	2.211

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 45

CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) by Social Status for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
"Lower/Working Class"	15	21.60	8.078	2.086
"Middle/ Upper Middle/ Elite Class"	84	23.49	6.160	0.672
Year I, Post-Intervention				
"Lower/Working Class"	10	23.30	5.618	1.777
"Middle/ Upper Middle/ Elite Class"	36	22.81	6.944	1.157
Year II, Pre-Intervention				
"Lower/Working Class"	28	19.75	4.986	0.942
"Middle/ Upper Middle/ Elite Class"	76	24.57	5.909	0.678
Year II, Post-Intervention				
"Lower/Working Class"	10	18.40	5.420	1.714
"Middle/ Upper Middle/ Elite Class"	24	22.58	6.480	1.323

Table 45

CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) by Social Status for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	3.681	0.058	-1.040	97	0.301	-1.888	1.816
Year I, Post-Intervention	0.178	0.675	0.207	44	0.837	0.494	2.393
Year II, Pre-Intervention	1.675	0.198	-3.836	102	0.000***	-4.816	1.256
Year II, Post-Intervention	0.521	0.476	-1.793	32	0.083	-4.183	2.334

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 46

CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) by Social Status for Each Survey Period

Administration Date	N	Mean	Std. Deviation	SE Mean
Year I, Pre-Intervention				
"Lower/Working Class"	16	13.81	4.415	1.104
"Middle/ Upper Middle/ Elite Class"	83	14.75	4.140	0.454
Year I, Post-Intervention				
"Lower/Working Class"	10	14.70	3.561	1.126
"Middle/ Upper Middle/ Elite Class"	36	14.11	5.092	0.849
Year II, Pre-Intervention				
"Lower/Working Class"	28	13.29	4.520	0.854
"Middle/ Upper Middle/ Elite Class"	76	14.11	4.270	0.490
Year II, Post-Intervention				
"Lower/Working Class"	10	12.00	2.708	0.856
"Middle/ Upper Middle/ Elite Class"	24	14.42	5.602	1.144

Table 46

CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) by Social Status for Each Survey Period, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
Year I, Pre-Intervention	0.213	0.646	-0.818	97	0.415	-0.934	1.142
Year I, Post-Intervention	2.422	0.127	0.042	45	0.966	0.071	1.665
Year II, Pre-Intervention	0.746	0.390	-0.855	102	0.395	-0.820	0.959
Year II, Post-Intervention	4.985	0.033	-1.692	31.064	0.101	-2.417	1.868

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Undergraduate Major

Overall, the results of the color-blind racial attitudes scores and subscores were non-significant and inconsistent. Results of the analysis of color-blind racial attitudes subscores for pre- and post-intervention dates show students with biological science majors had a higher mean CoBRASS score (and thus more likely to have greater color-blind racial attitudes) than non-biological science majors for the Year I Pre-intervention and Year II Post-Intervention survey periods. Non-biological science majors had higher mean CoBRASS scores for the Year I Post-intervention and Year II Pre-intervention dates (Year I Pre-intervention $p = 0.138$, Year I Post-intervention $p = 0.547$, Year II Pre-intervention $p = 0.444$, Year II Post-intervention $p = 0.435$).

Results of the analysis of CoBRAS unawareness in racial privilege subscores for the pre- and post-intervention survey dates also produced inconsistent and non-significant changes in colorblind racial attitude scores similar to the previous analysis. Students with biological science majors were found to have a higher mean score (and thus greater unawareness of racial privilege) than non-biological science majors for the Year I Pre-intervention and Year II Post-intervention survey periods. Non-biological science majors were found to have a higher mean CoBRASRP score (greater unawareness of racial privilege) for Year I Post-intervention and Year II Pre-intervention dates (Year I Pre-Intervention $p = 0.372$, Year I Post-intervention $p = 0.990$, Year II Pre-intervention $p = 0.402$, Year II Post-intervention $p = 0.750$).

Results of the analysis of CoBRAS unawareness in institutional discrimination subscore, for pre- and post-intervention show inconsistent and non-significant colorblind racial attitudes scores similar to the CoBRASRP results described earlier. Specifically, those students with biological science majors had a higher mean CoBRAS score than non-biological science majors during Year I Pre-intervention and Year II Post-intervention survey periods. Year I Post-

intervention and Year II Pre-Intervention dates showed non-biological science majors to have a higher mean CoBRASID score (higher rates of unawareness of institutional discrimination; Year I Pre-intervention p = 0.497, Year I Post-intervention p = 0.406, Year II Pre-intervention p = 0.921, Year II Post-intervention p = 0.660).

Results of the analysis of CoBRAS unawareness in blatant racial issues (CoBRASBRI) scores also produced inconsistent and non-significant changes in colorblind racial attitudes scores. Results show that those students with biological science majors were found to have a higher mean CoBRASBRI score (and thus greater unawareness of blatant racial issues) than non-biological science majors for the Year I Pre-intervention and Year II Post-intervention survey periods. Students who were non-biological science degrees were found to have a higher mean CoBRASBRI score (greater unawareness of blatant racial issues) for the Post-intervention Year I and Pre-intervention Year II dates (Year I Pre-intervention p = 0.094, Year I Post-intervention p = 0.808, Year II Pre-intervention p = 0.280, Year II Post-intervention p = 0.168).

Graduate Degree

Results of the analysis of CoBRASS scores for the pre- and post-intervention dates reveal that students with a graduate degree prior to starting medical school consistently showed a non-significant higher mean score than those without graduate degrees prior to starting medical school for each of the four survey periods (Year I Pre-intervention p = 0.214, Year II Post-intervention p = 0.905, Year II Pre-intervention p = 0.723, Year II Post-intervention p = 0.510). These findings were consistent with the other subscales of CoBRASRP, CoBRASID, and CoBRASBRI subscales.

Age

Despite the small number of students aged 26 and over, subscores were calculated with independent t-tests instead of non-parametric Mann-Whitney tests. A few exceptions were made and the reasoning and results are explained at the end of this section. Generally, results from the analysis of CoBRAS and subscore show that those students 25 years old or younger have non-significant, higher mean scores than students older than 25 years old for the four survey periods.

Results from the analysis of color-blind racial attitudes subscores for the pre- and post-intervention dates show that students 25 years old or younger have non-significant higher mean scores than students older than 25 years old prior to starting medical school for three of the four survey periods. The exception to this was the Year II Pre-intervention survey period where students 26 years old and older had higher mean color-blind racial attitude mean scores (Year I Pre-intervention $p = 0.244$, Year I Post-intervention $p = 0.203$, Year II Post-intervention $p = 0.919$, Year II Pre-intervention Year $p = 0.733$).

Results from the analysis of CoBRAS unawareness in racial privilege scores for the pre- and post-intervention dates show that students 25 years old or younger consistently had a non-significant higher mean score (and thus greater unawareness of racial privilege) than students older than 25 years old prior to starting medical school for each of the four survey periods (Year I Pre-intervention $p = 0.245$, Year I Post-intervention $p = 0.290$, Year II Pre-intervention $p = 0.379$, Year II Post-intervention $p = 0.536$).

Results from the analysis of CoBRAS unawareness in institutional discrimination scores for the pre- and post-intervention dates were non-significant and inconsistent. Results show that students 25 years old or younger were found to have non-significant higher mean scores than students older than 25 years old prior to starting medical school for three of the four survey

periods. The one exception is Year II Pre-intervention where students 26 years and older high a higher mean CoBRASID score than students 25 years old and younger (greater unawareness of institutional discrimination; Year I Pre-intervention p = 0.286, Year II Pre-intervention p = 0.270, Year I Post-intervention p = 0.515, Year II Post-intervention p = 0.995).

Results from the analysis of CoBRAS unawareness in blatant racial issues scores for the pre- and post-intervention dates by age were inconsistent. Results show that students 25 years old and younger were found to have significant higher mean scores than students older than 25 years old for both Year I survey dates (Year I Pre-intervention p =0.047 and Year I Post-intervention p = 0.044). This was the only case in which the significance levels differed between the independent t-tests and the non-parametric tests. There was non-significance for the Year I pre-intervention date (p = 0.061). Results for Year II were different than that that of Year I. Results show that students 26 years and older had non-significantly higher mean scores than students younger than 26 years old for both Year II Pre- and Post-intervention dates (Year II Pre-intention p = 0.155 and Year II Post-intervention p = 0.676). CoBRASBRI results were non-significant when separated by year for subjects 26 years old and older (Year I p = 0.298, Year I p = 0.678).

Effectiveness of Intervention: Measuring Change Between Year I and Year II

Associated Research Question 2:

2. Do first year medical students show significant improvement from year I in their cultural attitudes towards cultural competency issues in comparison to first year medical students in year II with increased exposure to cultural competency issues in the required curriculum?

Research Hypothesis 2:

H_0: There is no significant improvement in first year medical students from year I in cultural attitudes towards cultural competency issues in comparison to the first year medical students in year II.

H_a: There is a significant improvement in first year medical students from year I in cultural attitudes towards cultural competency issues in comparison to the first year medical students in year II.

Results of the analysis on the mean change of CoBRAS subscale scores between Year I and Year II are shown below (Table 47). The data were analyzed using only students who completed both surveys for the Pre-intervention and Post-intervention survey periods for their first year of medical school. The change in score between the Pre-intervention and Post-intervention dates was recorded and t-tests were run calculating the mean change in score. Mann-Whitney tests were also run showing the same significance results. (Table 69, Appendix B). Paired t-tests were not run as the same subjects were not used for both Year I and Year II. Results from the analysis of the mean change in CoBRA subscale scores show that there was a no significant change in color-blind racial attitudes, unawareness of racial privilege, institutional discrimination, or blatant racial issues from Year I to Year II. Results from the analysis of changes in color-blind racial attitudes, unawareness of racial privilege, institutional

discrimination, or blatant racial issues separated by demographic variables, was not performed due to the small number of available subjects that took both pre- and post-intervention CoBRAS scales.

Table 47

Mean Changes in CoBRASS/RP/ID/BRI between Years I and II

Administration Date	N	Mean Decrease in Score	Std. Deviation	SE Mean
CoBRASS				
Year I	22	0.4545	8.34225	1.77857
Year II	24	1.7917	8.78229	1.79268
CoBRASRP				
Year I	22	0.4091	3.99594	0.85194
Year II	24	2.0417	3.90628	0.79737
CoBRASID				
Year I	22	-0.1364	4.50709	0.96091
Year II	24	2.0833	3.74069	0.76356
CoBRASBRI				
Year I	22	0.2727	3.84438	0.81962
Year II	24	1.0000	3.45153	0.70454

Table 47

Mean Changes in CoBRASS/RP/ID/BRI between Years I and II, Continued

	Levine's F	Sig.	T	Df	Sig (2-tailed)	Mean Diff	Std. Error Diff
CoBRASS	0.065	0.800	-0.528	44	0.600	-1.33712	2.53105
CoBRASRP	0.005	0.944	-1.401	44	0.168	-1.63258	1.16570
CoBRASID	1.412	0.241	-1.823	44	0.075	-2.21970	1.21733
CoBRASBRI	0.439	0.511	-0.676	44	0.503	-0.72727	1.07567

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Final Summary of Results

Administration of the CoBRAS survey for Years I and II show a higher response rate by first year medical students for the Pre-Intervention dates (Year I Pre-intervention response rate: 84.3%, Year II Pre-intervention response rate: 79.9%) with a much lower response rate for both Post-Intervention dates (Year I post-intervention response rate: 39.7%, Year II post-intervention response rate: 25.3%). Results from the analysis of demographic data for the Year I and II Pre-Intervention survey periods provide a demographic picture that reveals many similarities between the two entering classes, therefore making comparisons between the two classes more generalizable.

In answering the first research question, general results of CoBRAS subscale scores show no significant change in mean scores between the Pre-Intervention and Post-Intervention dates of Years I and II (no change in color-blind racial attitudes). Subsequent results of CoBRASS scores and subscales were performed with scores separated by various demographic variables to answer the second part of the first research question regarding whether there are significant changes in attitudes when separated by demographic variables. Overall, significant changes in mean CoBRAS scores and subscores were found when scores were examined by gender and race/ethnicity on initial color-blind racial attitudes and subscale scores (Year I and II Pre-Intervention dates) with significance disappearing at the Year I and II Post-Intervention dates. Specifically, women and non-whites were found to have lower CoBRAS and subscale scores upon entering medical school than males and non-whites. This significance disappeared at the post-intervention survey dates for both years I and II. Results from the analysis of scores separated by other demographic variables (immigration status, income, social status, undergraduate major, graduate

degree, and age) found little significant differences in colorblind racial attitudes scores and were often inconsistent.

Analysis of mean change of color-blind racial attitudes and subscale scores between Year I and Year II served to answer the final research question of whether the added intervention of elective courses in Year II resulted in a significant change in color-blind racial attitudes. Analysis of the mean change in CoBRAS and CoBRAS subscale scores show a non-significant change from Year I and Year II, thus noting no significant changes in color-blind racial attitudes between the two years.

CHAPTER V: CONCLUSIONS AND IMPLICATIONS

Discussion of Findings

The analysis of CoBRASS and subscores during the pre- and post-intervention periods examined changes in color-blind racial attitudes occurring in first year medical students as a result of efforts to enhance the cultural competency curriculum. The results of the analysis consistently found no significant changes in overall color-blind racial attitudes, specifically unawareness in racial privilege, unawareness of institutional discrimination, and unawareness in blatant racial issues for all survey administration periods in Years I and II. Overall no significant changes in color-blind racial attitudes were found from pre- to post-intervention for the first year of medical school. Analysis of these results suggests that implementation of the current cultural competency curriculum has not resulted in significant changes in racial attitudes and awareness. This supports the original null hypothesis that there would be no changes in color-blind racial attitudes and awareness between the pre- and post-intervention survey periods during the first year of medical school and answers the research question of whether there were racial attitude changes during the first year of medical school.

Subsequent analysis for each year (Year I and Year II) examined differences in CoBRAS subscale scores when the sample was separated by the demographic variables (gender, race/ ethnicity, generation status, major, completion of post-graduate degree prior to entering medical school, parental income, self-described social status and age). Overall, differences in CoBRASS score and subscores were significant for Year I and Year II when analyzed by the factors of race/ ethnicity and gender for the pre-intervention survey dates. Differences in scores were not significant for the Year I and II Post-Intervention dates. The results indicate that women and non-whites tend to have lower color-blind racial attitudes, unawareness in racial privilege,

unawareness in institutional discrimination, and unawareness in blatant racial issues than males and non-whites as they enter medical school. These results were consistent with CoBRAS survey author Neville who noted that higher CoBRAS scores found in men and whites are consistent with higher beliefs in certain ideologies such as: (a) global belief in a just world, (b) sociopolitical dimensions of a belief in a just world, (c) racial and gender intolerance and (d) racial prejudice (Neville et, al., 2000). Believers in the Just World hypothesis (as covered more extensively in Chapter II) see the world as orderly and a place where individuals get what they deserve and deserve what they get. Therefore, relative to cultural competency, men and whites not only have higher color-blind racial attitudes and unawareness, but also have greater racial and gender intolerance and may "feel less of a need to engage in activities to change society or to alleviate the plight of social victims" (Rubin and Peplau, 1975, p. 83), thereby maintaining the status quo. Therefore, in this sample of medical students, males and whites would be less likely to value a program such as cultural competency education for their future medical practice.

Further analysis did not find any significant changes in CoBRAS subscores between Pre-Intervention and Post-Intervention dates when scores are separated by gender and race/ ethnicity. Therefore it was not possible to determine whether the subsequent Post-Intervention disappearance of a significant difference was due to males/ whites having less color-blind racial attitudes, women/ non-whites increasing in color-blind racial attitudes, or a combination of both.

Results of analysis of changes in CoBRAS means scores by the demographic variables of income, social status, immigration status, undergraduate major, graduate degree, and age showed that changes were either insignificant and/ or inconsistent. The analysis found no significant or consistent difference in CoBRAS and subscore mean scores when analyzed by these demographic variables. Overall, these results partially support the null hypothesis that no

significant mean change would be found in CoBRAS scores by these demographic variables (changes in mean scores for gender and race/ethnicity results were found to reject the null while changes in mean scores by the other measured demographic variables were found to support the null hypothesis).

Analysis of mean changes in CoBRASS and their subscores between Years I and II examined if there were significant changes in color-blind racial attitudes as a result of the changes made in the first year cultural competency medical curriculum. Analysis of results of CoBRAS scores consistently showed no significant mean change of CoBRAS and subscores between Year I and II. There were no significant changes in color-blind racial attitudes, unawareness in racial privilege, unawareness in institutional discrimination, or unawareness in blatant racial issues between the two years. Therefore results support the null hypothesis that no significant change in colorblind racial attitudes and awareness occurred between years I (no elective curriculum) and II (elective curriculum).

Comparison and Support of Previous Literature

Previous literature on the evaluation of pre-clinical cultural competency curriculum is scarce and inconsistent, making it difficult to provide proper comparison of results (Campaneria and Axtel, 2004). Previous studies differed in the type of intervention, length of measurement, timing of measurement (i.e. first year of medical school, second year of medical school) and the type of measurement and were usually limited by number of students, selection bias, and bias in self-reported data. For example, Crandall, George, Mario, and Davis (2003) analyzed the outcomes of a year-long, 20 session course in cultural competency and measured cross-cultural clinical skills and awareness. While the Crandall study found increases in students' estimates of their proficiency, this study was limited by number of students, self-selection and self-reported

data (Campaneria and Axtel 2004, p. 291), problems similar to the study of this paper. A second paper by Lim, Wegelin, Hua, Kramer and Servis (2008) found that both knowledge and attitudes improved over the course of a single two-hour lecture. The Lim results differed from that of this paper's study in that this project showed no significant change in knowledge and attitudes. In a third study by Beagan (2003) that researched the effects of cultural-competency curriculum, researchers found a lack of impact on awareness following a two-year course on social and cultural issues in medicine. Began conducted both surveys and interviews to find that "Most failed to recognize, or even denied, the effects of race/ ethnicity, class, gender, culture, and sexual orientation" (p. 605). The results from this study are probably most similar to the results of this present study in which no significant changes in racial attitudes were observed. Overall, the lack of cultural competency evaluation research, the variety of methodologies used, and inconsistent results makes it difficult to make accurate comparisons to the literature. One of the three comparable articles was consistent with the findings of this research project and found a lack of change in attitudes following a cultural competency intervention. Results from previous studies and that of the current research show is that there are common barriers in cultural competency evaluation research. For example, Crandall, George, Mario, and Davis (2003) had issues with response rates as well as the barrier of using self-reported data, similar to this research.

The finding that women and minorities enter medical school with lower racially biased attitudes than men and whites is consistent with previous literature (Crosson, Deng, Brazeau, Boyed, and Soto-Green, 2004; Marzan, 2008). In addition, these results are consistent with the results from other fields such as psychology which found that women, Blacks, and Latinos on average are more sensitive to social injustices than their male and white counterparts (e.g.,

Ponterotto et al., 1995; Sidanius, Pratto, & Brief, 1995). Neville et al., (2000) suggest that women may be more sensitized to institutional discrimination on the basis of gender, and thus, may be more aware of the existence of other types of discrimination, such as racism.

While gender and race/ ethnicity have been the most studied demographic variables related to cultural attitudes in medical school, there has been little research on changes in colorblind attitudes based on the variables of income, social status, immigration status, undergraduate major, graduate degree, and age. In a study on initial (prior to starting medical school) self-ratings of cultural competence, Marzan (2008) found that those who had higher income, and inversely, were U.S.-born (generational status), were found to have higher self-ratings of cultural competence. This contradicts the findings of this study that no significant change in mean scores occurred when examined by income and generational status.

Proposed Solutions and Implications for Increasing Cultural Competency in Medical School Education

Previous research has shown that, despite a recent mandate for cultural competency standards by the Liaison Committee on Medical Education (LCME), no consistent evaluation of cultural competency medical education exists (IOM, 2002; Campaneria and Axtel, 2004). During the two-year process of collecting data for this study, a number of casual observations were made that: (1) provide a glimpse into the effectiveness of a cultural competency intervention with one medical school curriculum as well as (2) possible roadblocks a medical school may face in trying to create effective implementation. For example, the American Association of Medical Colleges (AAMC) published a 2005 guide for medical schools that stated that "A cultural competence curriculum cannot be an add-on to the present medical school curriculum (AAMC, 2005, p. 2)." This importance of this suggestion manifests itself in the incremental changes made to the

cultural competency curriculum between Year I and Year II (i.e. the addition of elective curriculum to the first year of medical school) and the scarcity of significant changes in racial attitudes measured between the two years. This suggests that cultural competency educational efforts may need to be more comprehensive, integrative and required and not marginal and elective to potentially demonstrate a significant change in students' attitudes. Courses focusing on behavioral and social issues need to be added, enhanced, and required. One concern is that scholars have noted that any types of pedagogical interventions are insufficient in increasing physician's awareness of their patients' demographic characteristics on the care they provide because decision making is influenced by many factors other than factual information (Berger 2008, p. 102). For example, "many people consciously hold enlightened beliefs about race/ ethnicity while unconsciously maintaining negative beliefs, and physicians may use stereotyping to fill informational gaps in clinical care" (Berger, 2008, p. 102). Therefore, interventions must occur at both the formal (i.e. classes) and informal (i.e. implicit rules) levels of education. In addition, cultural competency medical education may need to be integrated throughout a student's four-year education (Kripalani, Bussey-Jones, Katz, and Genao, 2006).

In order to create an effective comprehensive cultural competency program, the AAMC also notes that medical schools must first meet certain institutional requirements:

> • The curriculum must have the institutional support of the leadership, faculty, and students.
> • Institutional and community resources must be committed to the curriculum.
> • Community leaders must be sought out and involved in designing the curriculum and providing feedback.
> • The institution and its faculty need to commit to providing integrated educational interventions appropriate to the level of the learner.
> • A cultural competence curriculum must have a clearly defined evaluation process that includes accountability and evaluation (for example, evidence of a planning process to assure appropriate inclusion of material throughout the curriculum, details on curriculum process and content [including duration and types of educational experiences], specific student feedback, and consideration) (AAMC, 2005, p.2).

During the process of conducting this research, the researcher casually observed miscommunication at the medical school from which the sample was drawn. The researcher noted a couple instances of miscommunication between parties on the final implementation plan of the additional cultural competency curriculum. Even after programs were implemented, many students were unaware of the extracurricular opportunities, suggesting a lack of communication and promotion of the programs. Given that the medical school had the difficult task of creating and implementing new programming into an already busy pre-existing curriculum, it is understandable how miscommunication could have occurred. Based on these casual observations made during the research process, it is foreseeable that such miscommunication will be reduced in the future. To improve communication there are a few interventions that medical schools can try. Specifically, medical school administration can practice better communication with all applicable players (e.g., administration, faculty, teaching assistants, and students). Cultural competency should be a topic discussed at every major curriculum-based meeting at the medical school. In addition, someone should be assigned the task of being "in charge" of the overall cultural competency curriculum at all levels of medical education (years 1-4 of medical school and even into residency and faculty training) and attend every meeting in which changes to the cultural competency program will be discussed, whether it deals with pre-clinical or clinical education. This would create a centralized source of information regarding cultural competency programming, avoiding any repetition of material as well as ability to spot areas lacking in cultural competency curriculum.

The major finding of this research is that women and non-whites had significantly lower initial color-blind racial attitudes and unawareness upon entering medical school than men and whites. Though significant changes in scores disappeared during the post-intervention survey

dates, this finding warrants further investigation due to sample size and possible lack of random selection. The baseline effect suggests that medical schools cannot assume that all students come in with the same level of color-blind racial attitudes. These differences in entering color-blind racial attitudes and awareness are important for medical schools to keep in mind when designing a cultural competency curriculum. The unique attitudes and awareness of women and non-whites should be seen as an asset by the medical school administration to increase cultural competency. While it may be improper for female and non-white students to share their individual experiences as a representation of their entire race/ ethnicity/ gender in a formal classroom setting, female and non-whites medical students may be influential in shaping the informal/ hidden curriculum through out-of-class interactions and experiences.

The research cannot exclude the possibility that the presence of a diverse study body can help change racial attitudes. In a recent survey of over 20,000 U.S. medical students, Saha, Guiton, Wimmers, and Wilkerson (2008) found that whites students who attended medical schools with greatest amount of racial diversity (measured by the proportion of underrepresented minorities-URM) were significantly more likely to: (1) "rate themselves as highly prepared to care more minority populations" and (2) have "strong attitudes endorsing equitable access to care" (p. 1135) compared to white students who attended medical schools with less racial diversity. There were no significant associations found for nonwhite students. The lack of a significant mean CoBRAS difference between Years I and II found in this research suggests that the addition of formal elective curriculum in Year II did not result in change in racial attitudes. However, the presence of a mean decrease in colorblind racial attitudes, while non-significant, was present during both Year I and Year II. Demographic frequencies show a diverse study body

in terms of gender and race/ ethnicity. This non-significant decrease, while it can be due to either poor sampling size or the current formal curriculum, may also be due to the diverse student body.

It is important to note that increasing cultural competency in medical school requires a multi-factorial solution and that enhancing student diversity (e.g. enhanced recruitment), while critical, is only one solution to a very complex problem. While research has shown that having a shared gender, race/ ethnicity or ethnicity with a patient tends to increase trust and patient compliance, this shared race/ ethnicity does not necessarily provide physicians with an understanding of patients from different ethnic origins (Dogra & Karanjan, 2003). As the results of this study show, while there was an initial (pre-intervention) difference in mean colorblind racial attitudes score when separated by race/ ethnicity or gender, significant changes in scores disappeared at the post-intervention survey date. Thus, enhancing cultural competency medical education via both explicit and hidden curriculum may serve as a means to improve physician cross-cultural care.

Contributions to Knowledge Base

This study was able to enhance the current knowledge base in a number of ways. While the concept of cultural competency has existed since the 1960s, there have been difficulties in practical implementation and subsequent evaluation of the progress of cultural competency in medical education. Even as national mandates exist and numerous articles have discussed theoretical models and policy implications, medical schools still have little direction on how to implement and record the existence of such changes in cultural competency. In recent years there has been increased research on evaluating cultural competency in the medical and health professions (e.g., nursing, pharmacy, dentistry, and medicine). However, there are a limited number of studies evaluating cultural competency programs in medical education, and less so on

first year medical school education (Bussey-Jones, Genao, St. George, and Corbie-Smith, 2005; Crosson, et. al, 2004). Overall, this study adds to the knowledge base as a practical application of a much-discussed, growing subject. Cultural competency has been measured by a number of different variables such as attitudes, awareness, knowledge, and skills and separated by a number of demographic factors such as race/ ethnicity, gender. However, this study measures overall color-blind racial attitudes through the concepts of unawareness levels of racial privilege, institutional discrimination, and blatant racial issues. In addition, while the significant changes in colorblind racial attitudes were noted when the sample was separated by the demographic variables of race/ ethnicity and gender, supporting previous research, the lack of significant changes in scores when analyzed by other demographic variables (immigration status, income, social status, undergraduate major, graduate degree and age) adds to the currently sparse knowledge base and suggests that either these factors do not play a significant role in colorblind racial attitudes or that measuring colorblind racial attitudes along these demographic variables is difficult.

Strengths and Limitations of This Study

Strengths

There are a number of strengths to this study that assist with accurate interpretation of analysis. Administration of the CoBRAS survey during Years I and II had a high response rate from first year medical students during the Pre-Intervention dates. Analysis of demographics for the Year I and II Pre-Intervention survey dates showed many similarities and mirrored multiple aspects of the U.S. demographic description provided by the AAMC (Table 1 in Chapter 2). Analysis showed that the first and second year entering classes were very similar to each other with the exception that the majority of students during Year I were male and during Year II were

female. The demographic similarity to US medical student demographics and between the classes to each provides comparability between the two classes, validity, and more accurate interpretation of the results.

Another strength of this study was the use of the Color-Blind Racial Attitudes Scale (CoBRAS) instrument to measure racial attitudes. This scale was developed in 2000 and has been shown to be valid and reliable (Neville et al., 2000). The CoBRAS provides strength to this study in that it has been well-tested and cited by scholars in a number fields such as education, social work, counseling, and psychology (Atwater, 2007; Lee, Grotevant, Hellerstedi, and Gunnar, 2006; Neville, Spanierman and Doan, 2006). In addition, this scale tests an aspect of racism that is readily applicable to today's society. Specifically, Neville's CoBRAS instrument takes into account that modern "racism" as a form of discrimination has changed over time to the concept of color-blind racism, and subsequently the concepts of racial privilege, institutional racism, and blatant racial issues. Finally, CoBRAS has been shown to not be strongly associated with social desirability, the idea that one would respond to questions on CoBRAS strictly following that of social pressures and not one's own viewpoint (Neville, 2000). This lack of a strong association between the CoBRAs and social desirability makes the results more valid as students may not have been as likely to have answered CoBRAS statements on the basis of what they believe are socially acceptable answers, but instead what the subjects themselves actually think.

Challenges to the Implementation of the Study

Along with the strengths there are several limitations of this study. The discussion of limitations will be in two parts: limitations in the implementation of the study and limitations with the analysis of the study. The original goal of the research project was to administer and

subsequently analyze a number of surveys that measured awareness, attitudes, and knowledge related to culture as a measure of cultural competency. This goal was modified due to a number of decision-making changes from medical school administrations as this research was being developed. Changes included blocking research access to one of two medical schools and twice changing plans regarding implementation of cultural competency curriculum. Given that these changes were unforeseeable and uncontrollable on the part of the researcher, analysis was subsequently limited to that of cultural attitudes and awareness related to color-blindness at this medical school.

During Year II of this study, a number of interventions were discussed by the medical school administration and were to serve as the basis of comparisons between the two school years. While such interventions were discussed by the administration, not all were able to be finally implemented. Specifically, proposed integration of cultural competency topics in the Introduction of Human Disease (IHD) course was not implemented. In addition, the Behavioral Science course originally proposed both "direct" and "integrated" discussion of cultural competency in Year I (two lectures entitled "Cultural Competency I and II" and one lecture entitled "Healthcare Economics" to discuss cultural competency in relation to healthcare economics). This was to differ from the Year I where there were only two lectures that provided a "direct" discussion of the material. Despite this intention, examination of the PowerPoint lectures and personal attendance to the lectures suggests that there was little to no change in amount and mode of cultural competency curriculum for the Behavioral Science class (i.e. "direct" and "indirect" modes of learning). The net effect of these two classes (IHD and Behavioral Science) resulted in little to no change to the *required* curriculum in terms of both number of contact hours and modes of learning. Some changes were made to the first year

medical school cultural competency curriculum but they were limited to the *elective* curriculum only through Medical Spanish and ICAM seminar series. Table 64 provides a summary of the proposed and implemented changes.

Table 48

Baseline, Proposed and Implemented Cultural Competency Curriculum Changes

	Year I	Year II *Proposed*	Year II *Implemented*
Behavioral Science (Lecture-based learning)	Two lectures -Direct discussion -2 total contact hours	Three lectures -Direct and integrated discussion -2+ total contact hours	Three lectures -Direct and integrated discussion -2+ total contact hours (These implemented changes are questionable.)
Introduction to Human Disease (IHD) (Small-group based learning)	No sessions covering topic	Three sessions covering topic -Direct and integrated discussion -1 contact hour	No changes to 2007-2008 curriculum
Alternative medicine (Seminar-based learning)	**Not offered**	**Offered as voluntary** activity -Up to 7 contact hour, directly relevant to cultural competency) -seminar and participatory learning	**Offered as voluntary** activity -Up to 7 contact hour, directly relevant to cultural competency) -seminar and participatory learning
Medical Spanish (Seminar-based learning, interactive)	**Not offered**	**Offered as a voluntary activity** -Up to 5 contact hours -participatory learning	**Offered as a voluntary activity** -Up to 5 contact hours -participatory learning

In addition to the lower number of expected changes made to the curriculum, there were lower response rates during the Year II Post-Intervention survey administration. Lower Post-

intervention response rates for Year II compared to Year I may be due to the researcher being less familiar to the Year II cohort[5]. The low response rate made it difficult to conduct certain statistical analyses regarding the relationship of attendance rates to various cultural competency related events and changes to color-blind racial attitudes in relation to cultural competency.

Limitation to Analysis of Study

While there were a number of strengths to the analysis of this study, there were also a number of weaknesses. The first was the small sample size for the Post-Intervention survey administration dates (Year I and II). This created a number of difficulties. First, the small sample size made it difficult to choose parametric versus nonparametric analysis, thereby limiting potential power, robustness, and accuracy of results by administration dates. It was particularly difficult to choose between parametric and nonparametric tests in situations where variables had a disproportionate number of subjects (for example, a sample size of 10 for those with graduate degrees compared to 90 students without graduate degrees). Overall, a number of significant findings could have been hidden by the sheer lack of numbers needed for a more powerful statistical analysis, therefore making it difficult to determine a true significant change. Second, it is possible that with a small response rate at these two administration dates that there was a lack of a random sample. Table 9 shows the demographic differences between the Pre-and Post-Intervention administrations. In general women, minorities and individuals of lower social classes were more likely to fill out surveys during the post-administration dates than men, whites, and individuals of higher social status. Third, the smaller numbers also limited additional analysis by demographic variables.

[5] The researcher attended several medical school classes with the Year I cohort and interacted on a daily basis with many of the medical students. This contrasts with the Year II cohort where the researcher's relationship with the medical students was as an administrative teaching assistant during the spring semester and only had direct interaction with the students a handful of times.

There are a few ways to increase post-intervention response rates for future studies. The first is to provide several opportunities for students to take the survey (versus one time administration of the survey). This allows students who may have wanted to take the survey, but had a scheduling conflict with the date it was administered, to take the survey. The second is to change the survey from paper-based to internet-based, allowing students to take it at their leisure and anywhere there is a computer with internet access. Both of these survey methods have limitations. Allowing students to take the survey at different times introduces the possibility that students will talk about the survey amongst them and "compare answers." This lends itself to students answering questions based on social-desirability and not their own attitudes. In addition, changing the survey from paper-based to internet-based may lower the pre-intervention survey date response rate. This is because the survey is implemented during orientation week, a very busy period for first year students, and students may easily forget to take the survey.

Another limitation was that the CoBRAS instrument only tested one aspect of the complex concept of cultural competency (attitudes, and more specifically, racial attitudes). It is possible that the first year of medical school may have had an influence on cultural knowledge or other cultural attitudes (e.g., sexuality or disability), concepts that may better tested by other surveys. Such survey instruments differ in terms of their intended use (i.e. general population versus medical students), aspect of cultural competency being evaluated (i.e. knowledge versus skills versus attitudes), evaluation of answer choices (i.e. Likert-scale versus one correct answer choice, short answer) and a number of other factors. Within the number of scales created specifically for evaluating cultural competency in medical education, scales could differ in their specified use (i.e. non-clinical versus clinical, first year, third year). In fact, as mentioned in Chapter III, the original intention of this study was to include several surveys that measured not

just color-blind racial attitudes but ethnocentric and gender-based attitudes as well. This would have allowed the study to analyze changes in various cultural attitudes within the medical education curriculum. In addition, CoBRAS does not have "cutoff" scores, or scores that tell whether one "has" colorblind attitudes or "does not have" colorblind attitudes. Since CoBRAS only measures if attitudes increased or decreased, its usefulness is limited. Therefore, CoBRAS does not designate individuals as being "racially biased" versus "non-racially biased" but can tell if racial bias is greater between and within groups and over time.

In addition, there were communication problems that led to the study being modified a number of times while being conducted. In the process of collecting data, the researcher casually observed that there were inconsistencies in the medical school's reporting their proposed changes to the first year cultural competency curriculum. In the process of obtaining information about the proposed changes between years I and II, the researcher received a number of different responses from different individuals. While such miscommunication was very likely due to the complications that come with the addition and creation of a new curriculum into a pre-existing one, the end result was a type of "add-on" curriculum. This eventual creation of an "add-on" elective cultural competency program may have been a factor in the non-significant change of results of this study.

Directions for Future Studies

The results of this study suggest that there are a number of opportunities for future research. First, this study only examined short-term effects of the current cultural competency medical education at this university. While the results showed a non-significant mean decrease in racial attitudes, a long-term assessment (i.e. all four years of medical school, residency, post-residency) may provide significant results, either for decreased or increased color-blind racial

attitudes, as students progress through their education. Second, this study only looked at the influence of the first year (pre-clinical instruction) of medical school. Future studies should explore the influence of either the post-clinical instruction, the entire medical school's curriculum (over four years), or even graduate medical education (internship and residency). Categorization would not be limited to binary factors such as white/ non-white, lower social status/ higher social status, etc., but would be able to support results by various socioeconomic factors (e.g. various races/ ethnicities, social statuses, incomes). Third, while this study was able to determine that there were significant differences in colorblind racial attitude mean scores when the sample was separated by race/ ethnicity and gender, a specific relationship could not be determined. Future studies would be highly useful if a statistical relationship could be found between the demographic variables of race and gender and colorblind racial attitudes scores. Fourth, the CoBRAS instrument can be paired up with other survey instruments that measure additional factors besides just attitudes and cultural competency based on race/ ethnicity (i.e. knowledge and skills as well as factors of religion and gender) providing a wider understanding of changes in cultural competency in medical education. Fourth, as mentioned earlier, this research was limited by the ability to only measure changes in elective curriculum. Future research could look at the impact of a formal required first year curriculum. Fifth, as suggested by the AAMC, further analysis should include mixed methods evaluations such as short answer questions and interviews (AAMC 2005). Finally, as something that is particularly unique to this school (in terms of the large number of students), future research could compare changes in color-blind racial attitude among non-traditional, dual degree MD students (i.e. the MSP program) over the period of their program.

Conclusion

This study helped to address a gap in the current medical education literature regarding cultural competency by examining the effectiveness of a current first year cultural competency program and its subsequent changes at one U.S. medical school in changing color blind racial attitudes. This study found no significant changes in color blind racial attitudes before or after the implementation of two elective programs available to first year medical students. The study did find significant changes in colorblind racial attitudes mean scores during the pre-intervention periods by race/ ethnicity and gender that disappeared during the post-intervention periods. Non-whites and women were significantly more likely to enter medical school with lower colorblind racial attitudes, unawareness of racial privilege, institutional discrimination, and blatant racial issues, than whites and men. Overall, the results suggest that the current cultural competency medical program, and its subsequent changes, were not effective in positively changing colorblind racial attitudes in first year medical students at this institution. Based on both these results and the experiences of the researcher while conducting this study, it is recommended that the medical school further work towards a required, comprehensive, and integrated cultural competency program that has comprehensive support and open communication. Making these changes to the curriculum will serve a number of purposes, from helping to meet national medical education licensing requirements, creating a culturally compassionate physician workforce, enhancing the patient-physician relationship and ultimately reducing health care disparities.

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APPENDIX A: SAMPLE SURVEY PACKETS

Sample Survey Packet, Year I

Social Attitudes Surveys: M-1 Orientation

Individual survey results are anonymous. Survey results will be summarized and analyzed in aggregate form.

First 2 letters of your MOTHER's first name: _____Month your MOTHER was born (e.g. June = 06): _____
First 2 letters of high school you graduated from: ____

Multicultural Counseling Knowledge and Awareness Scale (MCKAS), adapted for use in undergraduate medical education.
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Define the Following Terms to the Best of Your Ability in the Space Provided:

1. “Culture”

2. “Diversity”

3. “Cultural Competency”

4. “Race”

5. “Ethnicity”

6. “Sexuality”

7. “ Ethnocentrism”

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Color-Blind Racial Attitudes Scale

Neville, H. A., Lilly, R. L, Duran, G., Lee, R. M., Browne, L. (2000).

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Demographic Information:

1. Select your gender:

_____ Male ____ Female

2. Select your age:

_____ 19 years old	_____ 25	_____ 31
_____ 20	_____ 26	_____ 32
_____ 21	_____ 27	_____ 33
_____ 22	_____ 28	_____ 34
_____ 23	_____ 29	_____ 35
_____ 24	_____ 30	_____ > 35

3. Select your ethnicity/ race (circle all that apply)

_____ African American
_____ Asian American, Country of origin: _____
_____ Caucasian
_____ Hispanic, Country of origin: _____
_____ Middle Eastern, Country of origin:_____
_____ Native American
_____ Other: _____

4. Select your immigration status:

_____ 1st generation (you are a migrant from another country)
_____ 2nd generation (your parents are migrants to the US, you are born in the US)
_____ 3rd or greater generation (you were born in the US, your grandparents or later were migrants to the US)

5a. Select your current status:

_____ Traditional M-1 Student _____ MSP Student

5b. (If an MSP student) Write in your graduate department:

_____

5c. (If applicable) Indicate any programs that you are in:

_____Rural Health Program _____ Urban Health Program

6. Select your undergraduate major(s) that best fits you (select all that apply):

_____ Biological Science (ex. Microbiology, Human Biology etc.)
_____ Foreign Language
_____ Humanities (ex. History, Literature)
_____ Mathematics
_____ Physical Science (Chemistry, Physics)
_____ Social Science (Sociology, Anthropology, Ethnic Studies etc.)
_____ Other (Please note: _____)

-Continued on the next page-

7a. Did you have any other graduate degrees prior to entering medical school at UIUC (if you are in MSP do not count any degrees that you have obtained during your time enrolled in MSP)?

_____ Yes
_____ No

7b. (If Yes to 5a) What degree(s) have you obtained prior to entering medical school at UIUC?

_____ MA/ MS
_____ MPH
_____ JD
_____ PhD
_____ DO
_____ Other Health Care Doctorate (ex. Optometry, Chiropractic, etc.)
_____ Other, list _____

8. Please estimate your parental yearly household income:

_____ ≤ $10,000
_____ $10,000-$20,000
_____ $20,001-$30,000
_____ $30,001-$40,000
_____ $40,001-$50,000
_____ $50,001-$60,000
_____ $60,001-$70,000
_____ $70,001-$80,000
_____ $80,001-$90,000
_____ $90,001-$100,000
_____ ≥ $100,001

9. Best describe your parent's social status:

_____ Lower Class: One or both parents are on income-based governmental financial assistance (ex. Welfare, Medicaid, etc. but NOT Medicare)
_____ Working Class: One or both parents hold unionized, manual and/ or semi-skilled occupations.
_____ Middle Class: One or both parents hold semi-professional occupations (ex. Teacher, Allied health professional, etc.)
_____ Upper Class: One or both parents hold professional occupations (ex. Physician, Lawyer, Engineer, etc.)
_____ Elite: One or both parents are executive officers of a major corporation or hold a title of similar status and/ or income**.**

Thank you for your time!

-Complete-

Sample Survey Packet, Year II

Social Attitudes Surveys: M-1 Orientation

Individual survey results are anonymous. Survey results will be summarized and analyzed in aggregate form.

First 2 letters of your MOTHER's first name: _____Month your MOTHER was born (e.g. June = 06): _____
First 2 letters of high school you graduated from: ____

Social Attitudes Survey

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Color-Blind Racial Attitudes Scale
Neville, H. A., Lilly, R. L, Duran, G., Lee, R. M., Browne, L. (2000).

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-Continued on the next page-

BIDR Survey

-Not reprinted per copyright protection-

-Continued on the next page-

Demographic Information:

1. Select your gender:

_____ Male ____ Female

2. Select your age:

_____ 19 years old	_____ 25	_____ 31
_____ 20	_____ 26	_____ 32
_____ 21	_____ 27	_____ 33
_____ 22	_____ 28	_____ 34
_____ 23	_____ 29	_____ 35
_____ 24	_____ 30	_____ > 35

3. Select your ethnicity/ race (circle all that apply)

_____ African American
_____ Asian American, Country of origin: _____
_____ Caucasian
_____ Hispanic, Country of origin: _____
_____ Middle Eastern, Country of origin:_____
_____ Native American
_____ Other: _____

4. Select your immigration status:

_____ 1st generation (you are a migrant from another country)
_____ 2nd generation (your parents are migrants to the US, you are born in the US)
_____ 3rd or greater generation (you were born in the US, your grandparents or later were migrants to the US)

5a. Select your current status:

_____ Traditional M-1 Student _____ MSP Student

5b. (If applicable) Indicate any programs that you are in:

_____Rural Health Program _____ Urban Health Program

-Continued on the next page-

6. Select your undergraduate major(s) that best fits you (select all that apply):

_____ Biological Science (ex. Microbiology, Human Biology etc.)
_____ Biomedical Engineering
_____ Engineering (other than Biomedical)
_____ Foreign Language
_____ Humanities (ex. History, Literature)
_____ Mathematics
_____ Physical Science (Chemistry, Physics)
_____ Social Science (Sociology, Anthropology, Ethnic Studies etc.)
_____ Other (Please note: _____)

7a. Did you have any other graduate degrees prior to entering medical school at UIUC (if you are in MSP do not count any degrees that you have obtained during your time enrolled in MSP)?

_____ Yes
_____ No

7b. (If Yes to 5a) What degree(s) have you obtained prior to entering medical school at UIUC?

_____ MA/ MS
_____ MPH
_____ JD
_____ PhD
_____ DO
_____ Other Health Care Doctorate (ex. Optometry, Chiropractic, etc.)
_____ Other, list _____

8. Please estimate your parental yearly household income:

_____ ≤$25,000
_____ $25,001-$50,000
_____ $50,001-$75,000
_____ $75,001-$100,000
_____ ≥ $100,001

9. Best describe your parent's social status:

_____ Lower Class: One or both parents are on income-based governmental financial assistance (ex. Welfare, Medicaid, etc. but NOT Medicare)
_____ Working Class: One or both parents hold unionized, manual and/ or semi-skilled occupations.
_____ Middle Class: One or both parents hold semi-professional occupations (ex. Teacher, Allied health professional, etc.)
_____ Upper-Middle Class: One or both parents hold professional occupations (ex. Physician, Lawyer, Engineer, etc.)
_____ Elite: One or both parents are executive officers of a major corporation or hold a title of similar status and/ or income.

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(Note: Question 10 included only in the final post survey)

10. Please check which events you participated in during the 2008-2009 school year:

____ Behavioral Science lecture: Basic Healthcare Economics, Dr. Joe Goldberg, March 19, 2009
_____ Behavioral Science lecture: Cultural Competency I, Dr. Wesley McNeese, April 14, 2009
_____ Behavioral Science lecture: Cultural Competency II, Dr. Carol Packard, April 16, 2009
_____ IHD Case #3: Ms. Gelb, Jan 22, 2009
_____ IHD Case #4: Mr. Frost, Feb 19, 2009
_____ IHD Case #5: Ms. Darling, April 30, 2009
_____ Medical Spanish Session 1: Introduction
_____ Medical Spanish Session 2: Body Parts
_____ Medical Spanish Session 3: History Taking
_____ Medical Spanish Session 4: Signs and Symptoms
_____ Complementary, Alternative & Integrative Medicine (CAIM) Introductory Lecture August 22, 2008 (Given during M-1 orientation)
_____ CAIM: Guided Imagery and Relaxation as Medicine, Sept 30, 3008
_____ CAIM: Introduction to Meditation- Qi Gong Workshop, Sat. Oct 11, 2008
_____ CAIM: Qi-Gong Workshop, Oct 17-18, 2008
_____ CAIM: Mind Body Experimental Workshop Series, Spring 2009
_____ CAIM: Yoga workshop, April 18, 2009
_____ CAIM: Listening and Healing, April 21, 2009
_____ CAIM: Clinical Observorships: If participated, please list mentor and number of hours participated _____, hours _____

Thank you for your time!

-Complete-

APPENDIX B: ADDITIONAL TABLES

Table 49

Non-Parametric Mann-Whitney Tests for CoBRAS Score (CoBRASS) by Gender I and Year II

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Year I, Pre-Intervention						
Male	58	55.65	3227.50	803.500	-2.579	0.010*
Female	40	40.59	16.23.50			
Year I, Post- Intervention						
Male	23	26.65	613.00	215.000	-1.299	0.194
Female	24	21.46	513.00	515.000		
Year II, Pre-Intervention						
Male	48	61.20	2937.50	1022.500	-2.346	0.019*
Female	58	47.13	2733.50			
Year II, Post-Intervention						
Male	14	21.36	299.00	86.000	-1.891	0.59
Female	20	14.80	296.00			

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 50

Color-Blind Racial Attitudes Scores (CoBRASS) by Gender, Mann-Whitney Tests, Year I

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Men						
Pre-Intervention	57	42.91	2446.00	575.000	-1.128	0.259
Post-Intervention	24	36.46	875.00			
Women						
Pre-Intervention	40	33.29	1331.50	448.50	-0.437	0.662
Post-Intervention	24	31.19	748.50			

Table 51

Color-Blind Racial Attitudes Scores (CoBRASS) by Gender, Mann-Whitney Tests, Year II

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Men						
Pre-Intervention	48	32.22	1546.50	301.500	-0.581	0.561
Post-Intervention	14	29.04	406.50			
Women						
Pre-Intervention	58	41.59	2412.00	459.000	-1.386	0.166
Post-Intervention	20	33.45	669.00			

Table 52

Non-Parametric Mann-Whitney Tests for CoBRAS Unawareness of Racial Privilege Subscore (CoBRASRP) by Gender Year I and Year II

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Year I, Pre-Intervention						
Male	59	52.90	3121.00	1068.000	-0.993	0.321
Female	41	47.05	1929.00			
Year I, Post- Intervention						
Male	23	23.63	543.50	261.500	-0.066	0.947
Female	23	23.37	537.50			
Year II, Pre-Intervention						
Male	49	55.33	2711.00	1356.000	-0.407	0.684
Female	58	52.88	3067.00			
Year II, Post-Intervention						
Male	14	21.29	298.00	87.000	-1.859	0.063
Female	20	14.85	297.00			

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 53

Non-Parametric Mann-Whitney Tests for CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) by Gender Year I and Year II

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Year I, Pre-Intervention						
Male	59	57.04	3365.50	823.500	-2.710	0.007*
Female	41	41.09	1684.50			
Year I, Post- Intervention						
Male	23	27.18	639.00	166.000	-2.168	0.030*
Female	23	19.22	442.00			
Year II, Pre-Intervention						
Male	48	61.18	2936.50	1023.500	-2.342	0.019*
Female	58	47.15	2734.50			
Year II, Post-Intervention						
Male	14	22.07	309.00	76.000	-2.246	0.025*
Female	20	14.30	286.00			

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 54

Color-Blind Racial Attitudes Unawareness of Racial Institutional Discrimination Subscore (CoBRASID) by Gender, Mann-Whitney Tests Year I

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Men						
Pre-Intervention	59	41.37	2441.00	671.000	-0.078	0.938
Post-Intervention	23	41.83	962.00			
Women						
Pre-Intervention	41	32.99	1352.50	451.500	-0.281	0.779
Post-Intervention	23	31.63	727.50			

Table 55

Color-Blind Racial Attitudes Unawareness of Institutional Discrimination Subscore (CoBRASID) by Gender, Mann-Whitney Tests, Year II

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Men						
Pre-Intervention	48	31.72	1522.50	325.500	-0.177	0.859
Post-Intervention	14	30.75	430.50			
Women						
Pre-Intervention	58	41.66	2416.50	454.500	-1.438	0.150
Post-Intervention	20	33.22	664.50			

Table 56

Non-Parametric Mann-Whitney Tests for CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) by Gender Year I and Year II

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Year I, Pre-Intervention						
Male	58	57.43	3331.00	816.000	-2.816	0.005*
Female	42	40.93	1719.00			
Year I, Post- Intervention						
Male	23	26.20	602.50	202.500	-1.368	0.171
Female	23	20.80	478.50			
Year II, Pre-Intervention						
Male	49	62.72	3073.50	993.500	-2.681	0.007*
Female	58	46.63	2704.50			
Year II, Post-Intervention						
Male	14	18.46	258.50	126.500	-0.474	0.641
Female	20	16.82	336.50			

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 57

Color-Blind Racial Attitudes Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) by Gender, Mann-Whitney Tests Year I

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Men						
Pre-Intervention	57	42.33	2413.00	608.00	-0.788	0.430
Post-Intervention	24	37.83	908.00			
Women						
Pre-Intervention	42	33.11	1390.50	478.500	-0.062	0.951
Post-Intervention	23	32.80	754.50			

Table 58

Color-Blind Racial Attitudes Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) by Gender, Mann-Whitney Tests Year II

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Men						
Pre-Intervention	49	32.89	1611.50	299.500	-0.721	0.471
Post-Intervention	14	28.89	404.50			
Women						
Pre-Intervention	58	39.22	2275.00	564.000	-0.184	0.854
Post-Intervention	20	40.30	806.00			

Table 59

Non-Parametric Mann-Whitney Tests for CoBRAS Score (CoBRASS) by Race Year I and Year II

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Year I, Pre-Intervention						
White	44	60.76	2673.50	692.500	-3.542	0.000***
Non-White	54	40.32	2177.50			
Year I, Post- Intervention						
White	16	26.72	475.50	156.500	-2.056	0.040*
Non-White	31	21.05	652.50			
Year II, Pre-Intervention						
White	49	58.95	288.50	1031.500	-2.059	0.040*
Non-White	55	46.75	2571.50			
Year II, Post-Intervention						
White	15	19.73	296.00	109.000	-1.163	0.245
Non-White	19	15.74	299.00			

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 60

Color-Blind Racial Attitudes Score (CoBRASS) by Race, Mann-Whitney Tests, Year I

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Whites						
Pre-Intervention	44	30.70	1351.00	343.000	-0.151	0.880
Post-Intervention	16	29.94	479.00			
Non-Whites						
Pre-Intervention	54	44.69	2413.50	745.500	-0.836	0.403
Post-Intervention	31	40.05	1241.50			

Table 61

Color-Blind Racial Attitudes Score (CoBRASS) by Race, Mann-Whitney Tests, Year II

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Whites						
Pre-Intervention	49	33.59	1646.00	314.000	-0.848	0.396
Post-Intervention	15	28.93	434.00			
Non-Whites						
Pre-Intervention	55	39.37	2165.50	419.500	-1.275	-0.202
Post-Intervention	19	32.08	609.50			

Table 62

Non-Parametric Mann-Whitney Tests for CoBRAS Unawareness of Racial Privilege Subscore (CoBRASRP) by Race Year I and Year II

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Year I, Pre-Intervention						
White	45	58.13	2616.00	894.000	-2.384	0.017*
Non-White	55	44.25	2434.00			
Year I Post- Intervention						
White	15	29.90	448.50	136.500	-2.257	0.024*
Non-White	31	20.40	632.50			
Year II, Pre-Intervention						
White	50	60.29	3014.50	1010.500	-2.343	0.019*
Non-White	55	46.37	2550.50			
Year II, Post-Intervention						
White	15	20.03	300.50	104.500	-1.321	0.186
Non-White	19	15.50	294.50			

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 63

Color-Blind Racial Attitudes Unawareness of Racial Privilege Subscore (CoBRASRP) by Race, Mann-Whitney Tests, Year I

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Whites						
Pre-Intervention	45	30.17	1357.50	322.500	-0.257	0.798
Post-Intervention	15	31.50	472.50			
Non-Whites						
Pre-Intervention	54	44.72	2415.00	798.000	-0.591	0.554
Post-Intervention	32	41.44	1326.00			

Table 64

Color-Blind Racial Attitudes Unawareness of Racial Privilege Subscore (CoBRASRP) by Race, Mann-Whitney Tests, Year II

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Whites						
Pre-Intervention	50	34.25	1712.50	312.500	-0.974	0.330
Post-Intervention	15	28.83	432.50			
Non-Whites						
Pre-Intervention	55	39.95	2197.50	387.500	-1.675	0.094
Post-Intervention	19	30.39	577.50			

Table 65

Non-Parametric Mann-Whitney Tests for CoBRAS Unawareness of Institutional Discrimination Subscore (CoBRASID) by Race Year I and Year II

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Year I, Pre-Intervention						
White	45	61.92	2786.50	723.500	-3.568	0.000***
Non-White	55	41.15	2263.50			
Year I, Post- Intervention						
White	15	30.10	451.50	133.500	-2.324	0.020*
Non-White	31	20.31	629.50			
Year II, Pre-Intervention						
White	49	57.01	2793.50	1126.500	-1.441	0.150
Non-White	55	48.48	2666.50			
Year II Post-Intervention						
White	15	20.03	300.50	104.500	-1.322	0.186
Non-White	19	15.50	274.50			

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 66

Non-Parametric Mann-Whitney Tests for CoBRAS Unawareness of Blatant Racial Issues Subscore (CoBRASBRI) by Race Year I and Year II

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Year I, Pre-Intervention						
White	44	55.90	2459.50	994.500	-1.654	0.098
Non-White	56	46.26	4590.50			
Year I, Post- Intervention						
White	15	28.77	431.50	153.500	-1.859	0.063
Non-White	31	20.95	649.50			
Year II, Pre-Intervention						
White	50	55.61	2780.50	1244.500	-0.840	0.401
Non-White	55	55.63	2784.50			
Year II, Post-Intervention						
White	15	15.67	235.00	115.00	-0.957	0.354
Non-White	19	18.95	360.00			

Key: * = $p \leq 0.05$, ** $p \leq 0.005$, *** $p = \leq 0.001$

Table 67

Color-Blind Racial Attitudes Unawareness of Blatant Racial Issues (CoBRASBRI) by Race, Mann-Whitney Tests, Year I

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Whites						
Pre-Intervention	44	29.08	1279.50	289.500	-0.708	0.479
Post-Intervention	15	32.70	490.50			
Non-Whites						
Pre-Intervention	55	46.03	2531.50	768.500	-0.984	0.325
Post-Intervention	32	40.52	1296.50			

Table 68

Color-Blind Racial Attitudes Unawareness of Blatant Racial Issues (CoBRASBRI) by Race, Mann-Whitney Tests, Year II

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
Whites						
				315.000	-0.936	0.349
Pre-Intervention	50	34.20	1710.00			
Post-Intervention	15	29.00	435.00			
Non-Whites						
Pre-Intervention	55	37.01	2035.50	495.500	-0.335	0.737
Post-Intervention	19	38.92	739.50			

Table 69

Mean Changes in CoBRASS/RP/ID/BRI Between Year I and II, Mann-Whitney Tests

	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig (2-tailed)
CoBRASS						
Year I	22	22.66	498.50	245.500	-0.407	0.684
Year II	24	24.27	582.50			
CoBRASRP						
Year I	22	20.09	422.00	189.000	-1.660	0.097
Year II	24	25.40	639.00			
CoBRASID						
Year I	22	19.59	431.00	178.000	-1.900	0.057
Year II	24	27.08	650.00			
CoBRABRI						
Year I	22	21.43	471.50	218.500	-1.005	0.315
Year II	24	25.40	609.50			